Improved Program Delivery

Environmental Quality Strategic Review

A Follow-on Report of the Task Force on Program Review

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ENVIRONMENTAL QUALITY STRATEGIC REVIEW

A Follow-on Report
of the Task Force
on Program Review

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FOREWORD

Twenty study team reports of the Task Force on Program Review were tabled in the House of Commons by the Deputy Prime Minister on March 11, 1986. One of these reports presented a review of the Programs of the Department of the Environment, carried out by a mixed study team composed of private and public sector members. As with all other reviews, this initial study team satisfied its terms of reference within three months and submitted its final report to the Task Force in late summer of 1985.

The study team report suggested a series of options designed to improve the management of many of the programs administered by the Department of Environment. Some of these options raised complex government organization issues. Furthermore, several other study teams pursuing their independent terms of reference also found themselves reviewing overlapping federal environmental activities. Therefore, the Task Force requested an additional analysis to determine whether changes were required to the structure of the federal government for the delivery of its environment quality mandate.

This follow-on report was produced by a six member team in ten weeks. The participation of one private sector member from the initial study team made it possible for the new study team to take full advantage of the knowledge accumulated by the initial study team through its extensive consultations within and outside the federal government.

This follow-on report sheds some historical light on the difficulties which have plagued the federal government in the delivery of its environmental quality mandate. It looks into the gradual evolution of the structure of the federal government for dealing with environment issues and it suggests a series of options to gradually steer the federal government toward a more effective anticipatory and preventive approach to environmental protection in a national, cooperative mode.

The study team reports represent the first orderly step toward Cabinet discussion. They outline options as seen by the respective study teams and present them in the form of recommendations to the Task Force for consideration. The reports of study teams do not represent government policy nor decisions of the government. They provide the basis for more informed discussion of a wide range of options; as such they are a valuable tool, while not the last word, in the decision-making process.

The reports are released with gratitude to all those who participated and contributed to both the initial and to this follow-on report.

TEAM MEMBERS

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SUMMARY

On December 2, 1985, the Task Force on Program Review created a Special Study Team to undertake an environmental strategic review. The primary objective was to determine whether changes were required to the structure of the federal government for the delivery of its environmental quality mandate. The Study Team has undertaken an historical analysis of the organizational approach of the federal government since the 1960's; it has reviewed environmental concerns and the approaches in a few countries; it has sought and analyzed the views of interested departments and consulted a number of other key interested parties; it has analysed environmental economics; it has looked into the legislative, regulatory, compliance and enforcement regimes in the field of environment; it has examined the management structure of environmental science in the federal government; it has reviewed relevant Cabinet reports and decisions including those of the Task Force Review exercise; it has examined the Macdonald Royal Commission Report, the Report of the Inquiry on Federal Water Policy (Pearse), relevant work of the Law Reform Commission of Canada and considerable literature from many other sources.

The Study Team has reached several broad conclusions from its review which are structured around eight themes.

1. Environmental Quality Responsibilities of Sectoral Departments and the Integration of Environmental and Economic Factors

The study team's principal theme is that the key policy thrust which Canada should pursue over the longer term is to fully reflect environmental considerations within an integrated resource management framework. The Macdonald Commission recommendations, stemming from its analysis of each of the resource sectors, reflected this fundamental notion.

Previous decisions to structure the federal government around the principle that sectoral departments incorporate environmental concerns in their respective decision-making

processes are fully consistent with this thrust. The corollary to this conclusion is that, in the longer term, the Department of the Environment need not and should not retain operational responsibilities to support its environmental quality objectives. The maintenance and enhancement of environmental quality responsibilities in sectoral departments, including relevant scientific activities, is key to a fuller integration of environmental and economic factors in decision-making over time.

2. The Role of the Department of the Environment

The study team is convinced that in the short term, however, any major interdepartmental reorganization, with its inevitable destabilizing effects, would only serve to delay urgent improvements which ministers need to guide them in making difficult environmental quality decisions. Ministers nowadays are ill-equipped to make enlightened, satisfactory decisions in this value-laden area, which is increasingly linked to health concerns. The team has concluded that a number of fundamental changes must be made to the approach taken by the federal government in every aspect of its management of the environmental quality mandate, be it policy, communications, science or law and regulation. The Department of the Environment possesses the most significant pool of knowledge of and dedication to horizontal environmental quality objectives. It is, therefore, best positioned to act as the prime catalyst and facilitator of these changes. This Department must be in a position to steer the federal government away from its current expensive, reactive and corrective approach toward a more effective anticipatory and preventive one. This can be accomplished when the department provides national leadership, enhanced horizontal and national coordination, neutral scientific advice, effective consultations and negotiations with all stakeholders, balanced regulations and fair mediation. In short, DOE will have succeeded when it no longer has to carry out operational responsibilities to support the environmental quality mandate of the federal government.

3. A Regionally Sensitive National Approach

In this complex and challenging area with divided constitutional jurisdiction, linked but not limited to natural resources, tangible and early progress can only be achieved in a national, cooperative mode. All parties,

governments, industry, public interest groups and citizens the stakeholders - must work together in an open relationship without one party seeming to upstage the other. The team concludes that a regulatory framework is required, but it has to emerge from consensus-building, rather than being imposed upon the stakeholders. Canada's environmental quality issues are so regionally diverse that a uniform and inflexible approach is bound to fail. More flexibility will, therefore, have to be demonstrated in relying on provincial legislative and administrative mechanisms to deliver on national environmental quality priorities. In return, provinces and other stakeholders will be required to exert adequate vigilance in monitoring environmental quality programs, sharing all relevant data and knowledge within a national framework, participating in national scientific efforts and accepting accountability for their enhanced responsibilities.

4. An Economic Approach

The economic 'rent' of commonly held properties such as air and water should be more fully recognized, because the societal benefit/cost ratio for well-conceived environmental expenditures is high. Imaginative ideas to further internalize environmental costs in the costs of production and to identify them properly in the total economic accounting system will be required to integrate environmental concerns more effectively and efficiently in the economic decision-making process. There are a number of promising possibilities which would deserve serious consideration. For instance, pollution emission charges, marketable pollution rights and waste disposal pricing are but three possibilities. These approaches to pollution abatement are more cost effective and less interventionist than subsidies and tax expenditures which could be countervailable in a freer trade environment. A strong and punitive stance, such as practiced in the United States, also internalizes environmental costs but it is not as effective a cost instrument. Under it, the absorption of costs can often be postponed over a long period of time through delayed court proceedings. Its effectiveness can also be impaired by inadequate monitoring and anaemic enforcement practices. It would thus seem essential that, in preparing for the free trade negotiations with the United States, a thorough comparison be made of the practices followed by the two countries, to assess whether they are harmonious both in their design and implementation and to take major discrepancies into account in the ongoing bilateral trade negotiations.

In the view of the study team, integration of environment and economics also requires a more dynamic approach to the development of a national system of base environmental standards; this should be pursued in a cooperative and consultative mode with provinces and stakeholders. Such a national system does not necessarily imply uniform standards throughout a country as diverse as Canada. It is therefore suggested that these revised and additional standards be negotiated within the framework of new, comprehensive Environmental Planning Agreements with each of the provinces under the umbrella of Economic and Regional Development Agreements. Indeed, better use should be made of these existing federal-provincial collaborative instruments, since they provide an ideal vehicle for broad-based, but provincially focused, negotiations in which significant environmental and economic factors could be integrated. A federal government decision, well supported by provincial economic development ministers, to revisit all previously-signed ERDA agreements, to ensure that they adequately reflect environmental quality objectives, would provide a clear signal of the new national policy thrust in this area. Harmonization of federal-provincial review processes and the consolidation of the plethora of existing federal-provincial environmental agreements should also be pursued through these agreements.

5. A Communications and Consultation Approach

A totally new approach to environmental communications and consultation, which fully involves all stakeholders in the decision-making process, is required in the study team's view. Federal and provincial ministers should no longer be expected to make decisions alone in such a value-laden area. Advocacy, as practiced until very recently, must be replaced by a more positive and balanced educational, informational and consultative approach. Canadians should gradually be induced, as individuals, to recognize the economic rent of commonly held properties such as air and water. They must be brought to understand and then accept the inevitable short-term sacrifices this recognition would entail for their standards of living. The consultative processes to develop the long overdue National Environmental Policy would be most useful for this purpose, provided that all stakeholders are given an opportunity to participate and understand other stakeholders' viewpoints in a national context. Adequate public participation of a more strategic nature in consultative and environmental review processes, however, will require some governmental financial

assistance, as in the case of interest groups in other, more mature sectors. A new funding policy, in which all interested departments would participate, should be developed to support this new consultative thrust.

6. A Scientific Approach

Improved environmental communications techniques and economic incentive approaches were already said to be essential. The study team is convinced, however, that these improvements will never be achieved without top priority being assigned to narrowing the gap between the growing capacity of science to monitor the presence of pollutants and its lesser ability to meaningfully interpret this data. Innovative approaches are required to take environmental science out of the sole purview of scientists, to help citizens understand its current limitations and to ensure that federal scientific activities in this area foster a strengthened nation-wide effort. A pilot project is proposed for a new coordination mechanism, through the Minister of State for Science and Technology and the Multi-Year Operational Planning exercise of the Treasury Board. It would seek to improve the federal government's management and coordination of environmental science across all interested departments, and also in conjunction with all relevant scientific activities at the national level.

In the economic area, citizens might hold different opinions, but they all share the common data published by Statistics Canada. There is no comparable data base in the environmental area. As long as a comprehensive, national data base remains unavailable, opinions will tend to remain polarized, risk management and evaluation techniques will remain deficient and the decision-making process will remain difficult. The creation of a new, authoritative national data base, consolidating environmental information received from all stakeholders, including all provincial governments and the private sector, is therefore proposed.

Finally, another suggestion is made to follow the example of a growing number of OECD countries which regularly publish State of the Environment Reports. A novel feature, however, would be to convert these Reports into powerful accountability instruments monitoring, in sufficient detail, environmental improvements and deterioration against the pre-negotiated objectives. A

national accountability regimen is clearly required if the federal government wishes to ensure the environmental quality of Canada's ecosystems within a cooperative and decentralized mode, emphasizing incentives.

In the study team's view, none of the existing agencies of the federal government has the national credibility required to obtain, from a variety of sources across Canada, all the data needed for a truly national, comprehensive data base; nor would existing federal agencies have the credibility to manage a national accountability regimen for the environment, to which all will be subject. A new body, operating at arm's-length from the government and representative of all stakeholders, is therefore proposed for these two mandates.

7. A Legislative Approach

The whole thrust of this new approach to environmental quality is fully consistent with the guiding principles of the recently announced regulatory reform strategy. The economic incentive, less-interventionist approach, the development of standards which are regionally sensitive, the flexibility to choose the most effective and efficient regulatory instrument, the pledge to public participation and the proposed national accountability regimen are all supportive of the new regulatory thrust.

Furthermore, it should be possible to carry out all of the above initiatives with the exception of the eventual creation of the proposed National Council for the Environment, under existing legislation, and the balanced use of the Fisheries Act will be particularly critical to success in standard-setting negotiations.

The federal laws dealing with the environment, nevertheless, require a thorough review aimed at reducing duplication and overlaps, enhancing coordination, and to fill in some possible gaps: for instance, to support a cradle to grave approach on toxic chemicals. Particular attention in this proposed review should be paid to the incredible complexity of the legislative framework applicable in the North. In so doing, however, care should be taken not to arouse unfounded suspicions that the federal government is attempting to claim more powers when provincial and territorial support is essential to early and

tangible environmental action. Also, sectoral ministers should remain totally responsible and accountable for the administration of environmental aspects of their respective legislation and regulations. The primary purpose of this review should be to place emphasis on the administrative flexibility ministers should possess to maximize the use of incentive approaches to pollution abatement, rather than relying primarily on disincentives and punitive measures. In this context, a federal compliance policy is urgently required with due consideration given to the improvements needed for adequate monitoring activities on a national basis. In the view of the study team this is a critical need. If it can be confirmed by the Department of Justice that federal laws and regulations can, indeed, be administered by provinces for effectiveness and efficiency purposes, a variety of legislative instruments could then be used to achieve the same purpose. Careful attention will have to be paid as to how the federal government will ensure inter-regional consistency of various regulations.

If it were eventually decided to consolidate the Environmental Contaminants Act, the Canada Water Act and the Clean Air Act into a new Act, consideration could also be given to incorporating the yet to be developed National Environmental Policy in the new legislation.

8. A Short-Term Agenda

The suggested new approach for the delivery of the federal environmental quality mandate would represent a major shift from recent practices. But its various positive effects would not be immediate. For instance, even if an early decision in principle was made to establish the proposed National Council on the Environment, extensive consultations with provincial governments and other stakeholders would be required before proceeding with the necessary legislation. Several years would be required for the Council to perfect the truly national and comprehensive data base needed to translate the proposed State of the Environment reports into genuine accountability instruments. Enhanced coordination and priorizing of the total national environmental science effort may or may not produce immediate positive results, and the convergence of different scientific interpretations is a gradual process. Moving away from the "advocacy" approach would also require a change of culture within the Department. The resulting improvement in credibility, which the Department must

possess as a balanced regulator, will also take some time to materialize. Credibility can only be earned through concrete achievements.

Therefore, the Study Team has attempted, drawing from its earlier analysis and consultations, to feature a number of issues which could serve as the basis for a more elaborate short-term agenda and which would lend credence to the federal government's commitment to providing national leadership on environmental quality. This eventual plan, coupled with a revisiting of all ERDA's and their sub-agreements, the launching of federal-provincial negotiations on Memoranda of Understanding on Environmental Planning Agreements, the undertaking of consultations with key stakeholders on the suggested National Council on the Environment and the initiation of consultations and negotiations on standards, would provide immediate, visible and tangible evidence of the federal commitment to its new policy thrust of better integrating environmental quality concerns in the economic decision-making process.

SUGGESTED OPTIONS

In view of the analysis contained in this report, the study team suggests that the government consider the following options:

A. General

1. The key policy thrust to be pursued by the federal government over the longer term be to fully incorporate environmental considerations within an integrated resource management framework and that all federal economic activities with direct and indirect impacts upon renewable and non-renewable resources, from inception, through implementation to evaluation be guided by this principle.

2. The policy thrust enunciated in paragraph 1 above will best be implemented if ministers with direct or indirect responsibilities for the management of renewable and non-renewable resources maintain and over time strengthen the operational expertise and responsibilities required to incorporate environmental quality concerns fully in the decision-making process, emphasizing a preventive and anticipatory approach.

3. No interdepartmental reorganization of environmental quality responsibilities be undertaken at this time.

4. All federal activities having direct or indirect impacts on environmental quality be identified, their related resources quantified and progress monitored and reported upon annually by all affected Departments, including through their respective Annual Reports.

B. Economics

5. A comprehensive proposal be brought forward on various mechanisms which could be implemented at the national level to better recognize the economic rent of commonly held properties such as air and water, on the understanding that:

   a) mechanisms which internalize the cost of environmental benefits, such as regulations flowing from standard setting, emission charges or water

pricing are more effective and efficient instruments than subsidies or tax expenditures, which tend to externalize the cost;

b) economic incentive approaches such as emission taxes or charges are usually more efficient and effective instruments than punitive regulatory approaches;

c) government revenues accruing from such emission charges, taxes or water pricing should be redirected only to environmental quality initiatives;

d) a thorough comparative analysis be made of the environmental practices followed by Canada and the United States to assess whether they are harmonious both in their design and implementation and that any major discrepancies be taken into account in the ongoing negotiations on free trade between the two countries; new Canadian environmental measures be so designed as to minimize the possibility of countervailing actions.

6. All existing federal environmental pollution standards be reviewed and new sectors be identified for which standards are necessary, on the understanding that these new ambient and emission standards would be developed with the provinces and stakeholders and would:

a) support the overall objective of the federal government to provide for all Canadians the same base standards of protection from environmental pollution;

b) be monitored, be reviewed periodically and be subject to possible adjustment upwards or downwards in the light of new data, scientific understanding or changing circumstances;

c) be subject to adjustment for greater stringency where differences exist in specific local conditions, including geographic, economic, social and health factors and provincial priorities;

d) not be driven solely by new more sensitive detection methods, without corresponding scientific effort to improve understanding and interpretation;

e) respect cultural differences and needs, including native food supplies, traditions, public health, degree of regional urbanization and population concentration;

f) have regard for the components which go to make up local situations (the industrial and urban mix, geography and ecosystem) and the possible additive or synergistic effects of their effluents and impacts on environmental quality, including such factors as ambient conditions, aquifer sensitivity, endangered species, and differences in capacity to safely absorb effluents;

g) contain implementation schedules, where necessary, to reflect the timing of a series of predetermined, decreasing pollution levels to automatically reach the established end-point base standard;

h) demonstrate a willingness by the federal government to lead by example and to provide targets for others to emulate by increased stringency within the areas of its jurisdiction, where appropriate;

i) be promulgated in the form of regulations;

j) preferably be administered and enforced by the provinces through their own legislation, if possible, or through federal legislation where necessary;

k) be established with the full participation of all other interested ministers, and particularly of the Minister of Fisheries and Oceans whenever fish habitats could be affected by the standards arising from the consultation and negotiations.

7. Economic and Regional Development Agreements (ERDA's) be the chosen federal-provincial instrument to negotiate and implement environmental quality measures requiring federal-provincial negotiations and action, and that:

a) all ERDA's and subsidiary agreements be reviewed to ensure adequate consideration is taken of environmental quality issues and, when desirable, agreements and subsidiary agreements be amended at their next annual review;

b) memoranda of understanding on Environmental Planning Agreements under the ERDA umbrella be negotiated with all provinces to provide for a joint identification of environmental quality objectives and priorities with each province;

c) these memoranda of understanding be used to negotiate the development of joint efforts for the internalization of environmental costs; the development of base standards of environmental quality; the identification of the legislative and regulatory instruments to implement standards; the choice of procedures to implement and enforce such standards; and the approach which should be used to monitor and report on compliance;

d) all previous federal-provincial agreements on environmental quality be incorporated in these Memoranda of Understanding, where they are continued;

e) further harmonization of federal and provincial environmental review processes be achieved through these Memoranda of Understanding or through sub-agreements where available.

8. Serious consideration be given to transferring the Department of the Environment, or at least its environmental quality functions, from the Social Development Envelope to the Economic Development Envelope.

C. Communications and Consultation

9. A long-term and ongoing communications and consultation strategy be developed to provide for a balanced informational and educational, government-wide program to foster understanding of the underestimated costs which current standards of living impose on the environment; of the limitations and divergent scientific interpretations in this new area; and of the requirement that every Canadian has the right and a civic duty to participate more fully in environmental quality discussions and in the decision-making process; this strategy should, inter alia:

a) support, through various processes to be determined on the basis of consultations, the development of a National Environmental Policy;

b) make use of a yet to be developed new comprehensive federal policy for the funding, by all affected departments, of the participation of environmental non-governmental organizations in specific events and projects.

D. Scientific

10. The following principles be approved to narrow the gap between the growing capacity of science to monitor the presence of pollutants and its lesser ability to interpret these data, and the further gap in the ability of governments and industry to take corrective and preventive action:

a) recognition that the early development of an authoritative, unassailable and comprehensive national, as opposed to federal, data base is required to ensure that all stakeholders have access to all available information to develop their own scientific interpretations and policy conclusions;

b) coordination within and outside the federal government and focus on research and development priorities be improved;

c) public understanding of scientific data and participation in more sophisticated risk assessment and management be enhanced;

d) monitoring of environmental quality improvements and deterioration to provide for a national accountability regimen be upgraded.

11. For the purposes of implementing the principles outlined in paragraph 10 (a) and (d) above, the creation of a new, arm's-length, national body, to be known as the National Council on the Environment be approved in principle, subject to further national consultations and a subsequent report to Cabinet, on the understanding that the new Council would:

a) act as the custodian and manager of the National data base, the comprehensiveness of which would require full participation of all levels of governments, the private sector, universities and non-governmental organizations in providing it with the total environmental information they possess, including proprietary information under certain terms and conditions;

b) develop and publish regular State of the Environment Reports which would, inter alia, monitor and translate the comprehensive national data base into trends of improvement and deterioration in the various regions, ecobodies, economic and national resource sectors; these reports to introduce a new national accountability regimen to assist in the identification and follow up of environmental quality priorities across Canada by all levels of government, industrial sectors and other stakeholders and to enhance the quality of their respective monitoring activities that are required under a decentralized federal regime favouring an incentive to a punitive approach;

c) the Council to report to Parliament, through, but at arm's-length from the responsible minister, and its non-advocacy role and orientation be clearly conceived and thoroughly described in its legislation;

d) appointments to the Council to be shared by the federal and provincial governments, to be at tenure, and to be fully representative of all currents of environmental opinion, with adequate private sector, labour, academic and non-governmental representation.

12. For the purpose of implementing the principles outlined in paragraph 10 (b) and (c) above:

a) a pilot project be implemented whereby the Treasury Board, in the context of the next annual Multi-Year Operational Planning exercise, would ensure that all interested departments provide sufficient resources for environmental scientific activities based on recommendations from the Minister of State for

Science and Technology, after interdepartmental review of the environmental scientific priorities identified by the Minister of Environment;

b) a report be prepared on ways in which risk assessment and management techniques could be more widely introduced and integrated into the environmental decision-making processes with due consideration given to enhanced public participation and understanding of the results and limitations of science.

E. Legislation

13. New major legislative initiatives, with an environmental quality dimension, be based on the understanding that sectoral ministers should remain responsible and accountable for integrating environmental concerns in their ongoing responsibilities; that any amendment to any Act should be so crafted as to minimize unfounded provincial suspicions that the federal government is attempting to arrogate more power to itself; and that they should incorporate the results of a comprehensive review by the Department of Justice of the legislative framework of the federal government on the environment, including, inter alia:

a) early advice on the extent to which and the terms and conditions under which the administration of federal laws and regulations on environmental quality could be administered by the provinces;

b) identification of those technical amendments which might be required to reduce instances where the constitutional validity of federal laws and regulations could be challenged;

c) recommendations for streamlining and, wherever possible, consolidating environmental legislation and regulations, with due regard for underlying improvements in the administration of environmental regulations and their coordination, with the necessary attention to the legislation administered by the Minister of the Environment;

d) development, in consultation with the Territorial Governments and aboriginal groups, of a unique response to the complex and special problems of the North after considering the most effective approach among the following alternatives: new omnibus legislation for the North; or omnibus legislation developed from existing legislation, both for offshore and onshore activities; or technical amendments to existing Acts, or amendments to or the issuance of new regulations; the purpose of which should be to correct some of the existing weaknesses of federal Acts in the North, such as:

   i) ensuring that the Territorial Lands Act specifically refers to the protection of environmental quality and values;

   ii) using the regulations under the Territorial Lands Act as a model for regulations under other Acts directed toward protection of the onshore environment;

   iii) giving consideration to the creation of bodies which would provide integrated environmental management coordination of the current responsibilities of the various organizations with environmental mandates in each territory;

   iv) studying the feasibility of using section 33(13)(f) of the Fisheries Act to delegate power to the Yukon Water Board to authorize, under specific and negotiated conditions, the deposit of deleterious substances to be permitted under section 33(4) with prior authorization under section 31 of the Fisheries Act;

   v) considering removing the ocean bottom disposition from the Public Lands Grants Act and placing it in the Arctic Waters Pollution Prevention Act;

e) preparation of a comprehensive compliance policy which would, inter alia, consider methods to maximize use of incentive methods rather than relying solely on punitive ones to induce

compliance; and provision of the additional administrative flexibility Ministers may need pursuant to the new compliance policy, for the ongoing management of their respective Acts;

f) review of the existing disincentives and punitive legislative measures to ensure maximum consistency across Canada, either within any given Act or amongst different Acts for similar offences of comparable gravity;

g) consideration of the Law Reform Commission recommendation to amend the Criminal Code to enhance its flexibility to deal with actions seriously harmful or endangering to the environment.

F. Others

14. Early technical amendments to the Environmental Contaminants Act be brought forward to improve the management of chemicals process; and to the Hazardous Products Act to allow for the early implementation of the existing multi-partite agreement on W.H.M.I.S. (Workplace Hazardous Materials Information System).

15. Early consideration be given to a Safe Drinking Water Bill, which has been the subject of extensive consultations with federal departments, provinces and the industry itself, and which is to be parallelled by provincial legislation.

16. The eventual responses from the Department of the Environment to the Inquiry on Federal Water Policy and to the Regulatory Reform Strategy be guided by the thrust of the recommendations 1 to 13 inclusive, above.

17. A short term agenda, making optimum use of the provisions of existing legislation, for early actions be prepared to support the new policy thrust; highlight the new role of the federal government; establish the new cooperative relationships; and provide tangible early results to underscore the commitment of the federal government to environmental quality objectives.

"IN SEARCH OF CONSENSUS"

INTRODUCTION

On December 2, 1985, the Task Force on Program Review created a Special Study Team to undertake an environmental strategic review. The primary objective was to determine the extent to which changes might be required to the structure of the federal government for the delivery of its environmental quality mandate in the medium and longer term.

The Study Team took a phased approach to its work by:

a) examining the history of environmental concerns in Canada and its links to evolving federal and provincial organizations relating to the environment;

b) comparing Canada's environmental approach with other countries considered by the OECD to be at the leading edge of sophisticated environmental management;

c) providing a horizontal and strategic, tentative environmental agenda for the federal government over the next five to ten years, taking into account the bilateral trade negotiations with the United States;

d) considering the flexibility of the existing government structure for giving effect to desired changes;

e) assessing advantages and disadvantages associated with alternative organizational models, if required; and

f) relating its findings to relevant recommendations made by the initial Study Team on Environment Canada programs.

Consequently, the Study Team undertook an historical analysis of the federal government organizational structure since the 1960's; it has reviewed from available OECD literature the evolution of environmental concerns and the approaches of a few countries to meet them; it has sought, obtained and analyzed the contributions of a selected number of deputy ministers with ongoing environmental responsibilities and consulted with a selected number of governmental and non-governmental interested parties; it has made an analysis of environmental economics; it has looked

into the federal legislative, regulatory, compliance and enforcement regimes for the environment; it has examined the structure within which environmental science is being managed in the federal government; it has reviewed relevant Cabinet reports and decisions including those produced for the Task Force Review exercise; it has examined the Macdonald Royal Commission Report, the Report of the Inquiry on Federal Water Policy (Pearse), and considerable literature from both within and outside the federal government, including relevant work produced by the Law Reform Commission of Canada.

In examining the above, the Study Team reached several broad conclusions which are briefly summarized here to provide an organized perspective from which to approach this Report. They are:

- federal environmental quality responsibilities have been and should remain in sectoral departments, with DOE's role being primarily national leadership and horizontal coordination, while moving to an anticipatory/preventive approach;

- federal-provincial cooperation, rather than a top-down federal regulatory mode, is crucial to success;

- the key policy thrust to be pursued over the longer term is to fully reflect environmental factors within an integrated resource management framework;

- national but regionally sensitive environmental standards must be negotiated with provinces;

- ERDA's provide the best federal-provincial instrument for the negotiation of standards and for integrating economic and environmental factors;

- the development of the long overdue National Environmental Policy would provide a unique opportunity to support an enhanced and open, consultative process with all stakeholders to bolster consensus-building;

- environmental science must be harnessed through a variety of means to narrow the gaps between the capacity of science to discover pollution traces and its ability to interpret the effects in order to strengthen the standards-setting and decision-making process;

- new national accountability regimens for all parties are needed, including annual State of the Environment Reports from an independent national, not federal, body;

- much can be accomplished using existing legislation, but a broad-based review is required on some legal matters to support the proposed new policy thrust.

The Study Team realized from the outset that it had been asked to deal with one of the most complex and least understood areas of public policy, and this within a very short timeframe. Environmental protection is a relatively new field and because of this, its appropriate positioning within the socio-economic dimension is still evolving. There is little relevant academic public policy literature available except for that published by a very limited number of experienced environmental experts. Most of these are found in environmental non-governmental organizations (ENGO's). It is also a highly value-laden area calling for an increasing number of difficult political decisions without adequate supporting agreements on the facts and, even less, on their various interpretations by different stakeholders. Finally, it is an area of diffused federal-provincial constitutional and legal accountability.

The nature of its work did not enable the Study Team to use a traditional bottom-up approach, whereby options and conclusions are derived from an analysis of the multitude of federal programs relating to the environment. The Team did not feel such an approach would provide an adequate analytical framework to support its environmental strategic review objectives. Rather, it elected to project the positioning of environmental factors in the public policy decision-making process in the longer term. Once this was established, the Study Team ascertained the extent to which the existing federal structure supports the desired positioning. It then formulated a series of broad initiatives which should be taken to achieve this objective. This led to an identification of a number of short term issues which could be addressed immediately, together with the initiation of the the longer term agenda designed to correct some of the existing weaknesses which this and the previous Study Teams had found in the delivery of the federal environmental quality mandate.

Environment Canada is a conglomerate of several activities. Its 1985/86 budget stands at 10,294 person-years and $760 million. Parks programs are the largest

administrative component of the Department with $303 million and 4,901 person-years, followed by the Atmospheric Environment Service (AES) with $217 million and 2,303 person-years. The four water Conservation Programs (Flood Damage Reduction, Canada/US and Interjurisdictional Water Management, Water Management Data and Water Management Research) are allotted $101 million and 1,096 person-years. From the above four Water Conservation Programs, some 525 person-years and gross expenditures of $38 million are devoted to the provision of information and advice on the quality at various locations and on the quantity of Canada's inland waters at nearly 3,500 locations across Canada, against which provinces contribute some $4.5 million to operating costs. A total of 360 person-years and $35 million are also devoted to water-related research activities primarily at two institutes, one in Burlington and the other in Ottawa, planned to be transferred to Saskatoon in 1986. The Department also devotes 237 person-years and $18 million to the management and protection of migratory birds and their habitats, and some 75 person-years and $6 million to the promotion of environmentally-sound use and management of Canada's land resources. Environment Canada's Environmental Protection Service (EPS) operates with $56.7 million and 770 person-years.

The present report focuses primarily on the delivery of the federal environmental quality mandate and, in order to accomplish this, the Study Team paid particular attention to the Environmental Protection Service (EPS) of the Department of the Environment, with its central role as the federal coordinator of relevant programs, not assigned by law to other Ministers. In addition, the Study Team looked at departments with significant environmental activities such as Indian Affairs and Northern Development, Energy, Mines and Resources (including COGLA), Transport, Fisheries and Oceans, Agriculture and Health and Welfare. It also consulted the deputies of these and other departments.

The EPS programs of DOE are designed to prevent, eliminate or reduce the release of pollutants into the environment which could cause harm to human health and/or ecosystems and which could have adverse social and economic consequences. As noted previously, federal resources directed at these services through DOE, are relatively limited. With $56.7 million and 770 person-years of which some 42 percent of the funds and 45 percent of the PY's were to be expended at the regional level, EPS's resources

represent only seven percent of the total resources consumed by the Department, both in terms of dollars and person-years.

These figures, however, grossly underestimate the total federal spending in this area for a number of reasons:

- the federal government structure was so designed as to vest the various resource management departments with the responsibility of protecting the environment relevant to that resource. Considerable sums of money outside DOE are therefore expended for this purpose.

- environmental quality must rely on substantial scientific efforts which, for the reason stated above, are equally scattered across several agencies. For instance, seven departments are expected to spend some $14.6 millions in 1986-87 on the long-range transport of air pollutants programs alone, including acidic precipitation. A previous study showed that 24 departments and federal agencies devoted a total of $143.1 million and 2,622 person-years in 1981-82 to toxic chemical activities, albeit not all scientific.

- from a longer-term, strategic standpoint, environmental quality can hardly be disassociated from environmental quantity issues, especially if the federal government wishes to pursue an aggressive, comprehensive and integrated resource management approach to Canada's renewable and nonrenewable resources. Deforestation and its effects on water quality through soil erosion is a case in point. It is therefore essential to consider much of the resources devoted to quantitative and qualitative information gathered by the various departments as a necessary complement to expenditures devoted by DOE to environmental quality.

For these reasons, the Study Team paid considerable attention to DOE's research, monitoring and reporting activities in relation to water, wildlife and land

conservation, as these support the environmental quality mandate of the Department. These conservation activities of DOE employ close to 1,500 person-years with expenditures of more than $110 million.

With many sectoral departments having environmental responsibilities and with environmental science activities diffused among them, it was hardly surprising for the Study Team to learn also that there is no global picture of federal expenditures on the environment. Statistics Canada attempts to measure on an on-going basis the total federal scientific efforts in this field and the Study Team made use of this information, as well as Main Estimates and data collected by MOSST, to put together a rough picture of federal science expenditures on environmental issues.

The 1985-86 Main Estimates show DOE's science and technology activities at $160 million, which excludes $179 million for the related science activities of the Atmospheric Environment Service's Weather and Ice Services programs and similarly $24 million for the Inland Waters Quantity Data program. Forced to use a variety of sources with inherent definitional differences, the Study Team nevertheless attempted to track 12 other federal agencies' expenditures on environmental science and technology. These are estimated to spend roughly $170 million. Close to 90 percent of these expenditures are incurred by DIAND, Forestry, AECL, DFO, NHW and Agriculture. A conservative estimate of the amount spent on environmental science and technology by the federal government would be about $330 million, out a total of $4 billion for all science and technology activities.

In short, environmental activities are ill-defined, and as a result, it is not yet possible to estimate more precisely the total amount of resources the federal government invests in this area. It is clear, however, that environmental activities are undertaken by a variety of federal actors and that very large amounts are at stake. Clearly, a major identification and quantification effort is required to hold the various federal actors involved on the environment accountable for their relevant activities. The review which the Study Team has made of the Canadian historical perspective in this area explains why the various attributions of responsibilities are as they are today.

I. A CANADIAN HISTORICAL PERSPECTIVE

The 1960's

Conservationists, who in the 1950's and early 1960's, had long been concerned with air, water and noise pollution most noticeable in urban areas and with other issues such as incompatible land uses, wildlife protection and nature conservation, finally found, in the late 1960's, the popular support they had sought for years. Public pressure on governments for concerted action became more acute than ever before. Environmental quality had become an important policy and political issue and there was sufficient evidence that it would continue as such in the foreseeable future.

It was already recognized within the federal government that something had to be done to better integrate environmental concerns into the decision-making process. Several environmental incidents in Canada and abroad suggested that the federal government was ill-equipped to respond to growing environmental concerns. People recalled large scale disasters, such as the London smog episode of 1952, which proved that high death counts might result in a modern city with considerable emissions of sulfur dioxide and smoke, if a prolonged temperature inversion should occur. Closer to home, there was wide recognition that species of birds were being decimated by DDT, through hitherto unsuspected biological processes. The accelerated rate of natural resource depletion and the uncontrolled population growth in poorer countries became matters of public discussion. Concerns were being expressed over decisions to exploit and consume natural resources, such as energy, without considering their long-term consequences. Questions remained unanswered on such issues as the long-term effects of human activities on the upper atmosphere.

By the late 1960's, federal environmental legislation could be found in some fifteen statutes administered by nine departments. The establishment of the Department of the Environment in 1971 represented the first genuine structural attempt to come to grips with the coordination required in this area.

Several approaches were considered in forming the Department. The possibility of amalgamating virtually all renewable resource departments into one with built-in environmental objectives was considered. Other options would have excluded in varying combinations from the new department such renewable resource programs as the water sector, then housed in programs of three separate departments, and/or the federal lands program housed in DREE and/or Agriculture Canada. The government of the time finally settled for a partial integration.

Building around the renewable resource/research responsibilities of the then Department of Fisheries and Forestry, it was finally decided to incorporate in the newly-formed department other environmental quality functions such as the Water Sector - freshwater and oceans from EMR, the Atmospheric Environment Service from MOT, Air Pollution Control and Public Health Engineering from NHW, the Canada Land Inventory from DREE and the Canadian Wildlife Service from DIAND. The objectives were to recognize the pervasive possibilities for environmental damage to water and air, to ensure focused responsibility for virtually all renewable resources such as fish, forests and wildlife, but excluding agriculture, and to place this major federal responsibility under one Minister.

Further, the Department of the Environment Act, which was first enacted as Part I of the Government Organization Act, 1970, conferred on the Minister of the Environment a general mandate to oversee environmental quality, to coordinate federal programs and to cooperate with the provinces and other bodies, as set out in sections 5 and 6 of the Government Organization Act, 1970 (Annex B). It was already clear that other Ministers such as Agriculture, Energy, Mines and Resources, Transport, Health and Welfare and Industry, Trade and Commerce would be expected to retain a concern for the environment. Logical, operational, organizational, and political considerations led to certain other environmental quality responsibilities being retained by other departments, some only temporarily, as follows: the Department of Agriculture retained relevant responsibilities for agricultural soil quality and for pesticide research and control; EMR kept its responsibility for the use of water resources for hydro-electricity generation; External Affairs maintained broad responsibility for the International Joint Commission (IJC), including its

dealings on water pollution; Indian and Northern Affairs remained responsible for water pollution in the North and for National Parks; National Health and Welfare was to continue to deal with the effects of pollution on human beings, including air, water and radiation; the Department of Transport continued to look after water pollution from ships, air and noise pollution from aircraft and motor vehicles, and historic and recreational canals; the National Research Council was authorized, as a continuing responsibility, and in concert with other scientific organizations, to prepare and publish Scientific Criteria for Environmental Quality and to operate a Scientific and Technical Information Service on Pollution. In so organizing itself, the federal government made its decision based on its own system of government and culture. With other countries making their own decisions on this same basis, this has led to many variances among the practices of national governments.

DOE was therefore not created as a super-ministry, responsible for all things environmental. Most other countries reviewed by the Study Team have also followed this path, including unitary states such as Sweden. It was thought that the Minister had been given sufficient tools to combat gross sources of pollution, to improve the environment, to coordinate the federal effort, to cooperate with provinces, other governments, the United Nations and to lead the development of crisis management plans. It was nevertheless recognized that further legislative initiatives could occur and that still further transfers of responsibility from other departments could take place at some later stage.

To understand the 1971 government reorganization, it is also necessary to bear in mind the relative constitutional powers of the federal and provincial governments. The Constitution Act of 1867, as were all constitutional changes since, is silent on the respective roles of the federal and provincial governments in dealing with environmental issues. Consequently, the legislative base of the federal government gradually evolved around its responsibilities over "Peace, Order and Good Government", interprovincial and international trade, navigation and shipping, fisheries, Indians, criminal law, "works for the general advantage of Canada" and for federal lands. The fragmentation of the federal legislative base, therefore, evolved as much as a

matter of constitutional necessity as it did from the allocation of relevant federal responsibilities among different ministers. In other federal states, particularly so in Australia, the Study Team found that split constitutional jurisdiction on the environment exists also, with its inevitable challenges.

The 1970's

The basic characteristics of the early 1970's were strong and promising economic growth, limited provincial environmental expertise, unfocused environmental scientific activities and key issues involving easily identifiable gross sources of pollution. These were all conducive to an agressive federal regulatory approach and a large amount of new federal legislation was enacted and regulations promulgated. In 1970, amendments to the Fisheries Act were made and the Canada Water Act proclaimed. The Clean Air Act, the maritime oil pollution amendments to the Canada Shipping Act and the DOE Act were passed in 1971. The following year saw the passage of the Pesticide Residue Compensation Act, the Northern Inland Waters Act, the Radiation Emitting Devices Act, the Arctic Waters Pollution Prevention Act and the Pest Control Products Act. Some nine additional statutes primarily of an environmental nature, such as the Environmental Contaminants Act, were enacted in the following years.

These new laws enabled the federal government to pursue a great deal of regulatory activity. Amongst the most notable sets of regulations, the following deserve mention:

a) six sets of sectoral regulations were promulgated under Section 33 of the Fisheries Act, covering Chlor-Alkali Mercury Liquid Effluents, Meat and Poultry Products Liquid Effluents, Metal Mining Liquid Effluents, Petroleum Refinery Liquid Effluents, Potato Processing Plant Liquid Effluents and Pulp and Paper Effluents;

b) new vehicle emission standards were first brought forward in 1972, pursuant to the Motor Vehicle Safety Act administered by Transport Canada. These standards were revised in 1975 and 1979. (Cabinet recently has approved further revisions, to be effective in September 1987.) Each such revision resulted from extensive interdepartmental consultations, involving not only

Transport, but also Environment, Health and Welfare, Energy, Mines and Resources and Regional Industrial Expansion;

c) by virtue of the Clean Air Act, Lead-Free Gasoline Regulations were promulgated on October 30, 1973 and Leaded Gasoline Regulations were made on July 30, 1974;

d) ambient air quality objectives were also set out in separate Orders pursuant to the Clean Air Act;

e) Ocean Dumping Control Regulations administered by Environment Canada were promulgated under the Act on October 2, 1975.

These and other regulatory standards were set after extensive consultations had taken place with the provinces and industry, generally based on best practicable technology. The above-noted positive economic and federal-provincial factors made it possible for the federal government to come to decisions quickly on the prescribed standards as soon as it was felt that it had sought and obtained sufficient consensus.

In retrospect, some of these regulations have had measurable positive impacts on the environment, particularly in single source pollution abatement. These regulations, however, often implied substantial private sector investments supported by federal subsidies and tax incentives. The Pulp and Paper Modernization program is a case in point. In the early 1970's, nearly half of all waste tonnage being dumped into Canadian waters by industry was attributed to pulp and paper mills, and with provincial support, the industry was singled out for new regulations under the Fisheries Act. The industry was contemplating a major modernization effort and the time was ripe for the industry to absorb at least some of the costs associated with the new effluent standards. The 1974-84 General Development Agreements provided a unique and novel federal-provincial incentive instrument to incorporate environmental objectives in the investment process.

Another example of concrete achievement in that period was the Agreement on Great Lakes Water Quality between Canada and the U.S.A. in 1972 to clean up the Great Lakes by reducing phosphorus pollution. Both countries agreed on new

standards and the Agreement was reviewed in 1978. This has resulted in significant advances on the environmental challenge posed by the Great Lakes issue.

Rapid technological improvements were also occurring at that time and the scientific community was becoming increasingly sophisticated in its ability to identify and measure the presence and concentration of pollutant substances in the ecosystem where none had been detected before. As the decade progressed, technological advances improved the ability of science to discover new pollution threats, but its ability to interpret the single and combined effects of different types of pollutants on the ecosystem and on human health could not keep pace with its increasing ability to measure and monitor the presence of pollutants. This gap kept widening as did the gap between the ability of science to interpret and the ability of governments to take corrective and preventive action.

For instance, the content of PCB's in fish tissue can be measured through Gas Chromatography with electron capture detection down to fractions of one part per million. However, the lack of understanding of the toxicological impact of PCB's at these very low detectable levels has resulted in a situation where an arbitrary threshold level of one part per million was selected.

In addition, growing evidence pointed to the fact that some earlier approaches to pollution abatement, such as pollution dilution through the installation of taller stacks, or local waste disposal techniques, while having improved local pollution levels, had actually spread environmental problems over larger geographical areas and had caused unforeseen impacts. Identifiable results of some of these mistaken approaches have continued to manifest themselves in such environmental situations as the long-range transport of airborne pollutants (acid rain), leaching from toxic waste dumps (Niagara River and Love Canal) and ecosystem contamination by persistent chemicals, such as mercury in the English and Wabigoon Rivers, causing health and environmental concerns.

Also in the 1970's, environmental concerns, far from receding, accelerated with new scientific discoveries which increasingly related pollution problems to public health. Examples of these concerns were new findings leading to the

issuance of cancer alerts for a number of extensively used substances including the halogenated compounds trichloroethylene (a solvent used to decaffeinate coffee) and ethylene dibromide (used as a fumigant in grains and as an additive in leaded gasoline). Although the concentration of persistent chemicals present in any medium such as natural waters may be so low that even the most modern of analytical instruments can just barely detect and identify them, the concentrations increase with each successive step up the food chain until the potential hazard gives rise to concern.

The dissemination of often conflicting scientific interpretation or causality, particularly where human health was concerned, was bound to nurture the population's instinctive fear of the unknown. The societal response to the changing nature of the issues in the 1970's therefore materialized into a significant increase in the number and influence of non-governmental organizations which would not accept, on behalf of their ever-expanding constituencies, abstract theories of dealing with uncertainty through risk management and assessment.

The societal pressures were also felt by provincial governments who played, in varying degrees since the late 1970's, an increasing regulatory and enforcement role in relation to the environment, an area which they considered intrinsically linked to natural resources. They began to express increasing concerns over what they considered to be undue federal intrusion into provincial jurisdiction, over the consequent financial impacts federal decisions could have upon their treasuries and over the impact federal regulations could have on the short term profitability of firms providing employment, often in single-industry towns.

Indeed, in the latter 1970's, the costs of environmental regulation could not as easily be absorbed by an industry which had to struggle against the growing economic uncertainties that had plagued the occidental world since 1972, against the intense international competition, particularly from third world countries in primary production, and against the profound industrial restructuring which many Canadian industries had to undergo as a result of the GATT agreement. The general belief that constitutional discussions would resurface sooner than later induced provinces to do their utmost to protect their

constitutional responsibilities over such things as natural resources and municipal affairs and to establish their claims for new ones. Hence, a strong federal involvement to prevent water pollution raised implications extending much beyond the mere environmental issues for some provinces in particular.

Those factors which had been supportive of strong and direct federal initiatives in the early 1970's had therefore vanished. It is then easy to understand the difficulties that have plagued the subsequent efforts of federal agencies in their administration of those environmental laws and regulations dating from the early 1970's. A most telling sign of this trend can be seen in the limited number of prosecutions undertaken under the principal statutes designed to protect the environment. Although, the Canada Water Act, under the administration of DOE, has been most useful in negotiating federal-provincial agreements over a wide variety of water resource surveys, studies and programs, its provisions dealing with water quality management areas have seldom been used, nor has the Act ever been used in a prosecution. Similarly, under the Environmental Contaminants Act, which puts the onus on the government to identify environmental contaminants, only five substances have been listed so far and not one suit has ever been brought by either of the Departments responsible, Environment and Health and Welfare. Only two court actions have been conducted by Environment Canada under the Clean Air Act. By virtue of the Ocean Dumping Control Act, which is also an Environment Canada responsibility, two prosecutions have been conducted in the North and one is now in progress with respect to the coast of British Columbia. Prosecutions pursuant to s. 33 of the Fisheries Act are much more numerous but respond more to fisheries imperatives than to balanced environmental responses.

For all of the above reasons the federal approach to environmental matters by the late 1970's, unlike the U.S. Environmental Protection Agency which kept pursuing an aggressive regulatory approach, gradually started to move away from its strong initial regulatory stance to favour more efforts in guideline establishment for implementation at the provincial level, supplying general environmental information and building a leadership role in such issues as acid rain. DOE thus reverted from what used to be a top-down management approach to environment to one where the

department, through advocacy, encouraged citizen groups to assist the federal Minister of Environment in bringing about the required actions. Decisions had become value-laden and called for increasingly difficult consensus on economic, social and environmental factors, further exacerbated by federal-provincial tensions over their respective powers.

From the 1978 Reorganization to the Present

These were the factors at play when a further reorganization took place in 1978, subsequently enshrined in legislation the year after. This reorganization, however, was primarily designed to create a new Department of Fisheries and Oceans using structural elements withdrawn in the main from DOE. A few minor modifications were nevertheless made coincidentally to the DOE Act (Annex B) to highlight its horizontal coordinating role within the federal government, to emphasize the importance of considering environmental concerns at the planning stage of federal initiatives and to induce provincial governments to play a more prominent role in environmental affairs.

The overall implication of separating DFO from DOE, and the later parallel separation of Forestry, was to remove resource management responsibilities from DOE and further entrust to it heritage/conservation management, via the integration of Parks Canada. As with most major government reorganizations, DOE did not escape the difficulties associated with the major adjustments it had to undergo. On the environmental quality side, for instance, the Minister of the Environment lost control and accountability for the most powerful pollution abatement tool he had available with the Fisheries Act. Administrative arrangements, pursuant to a Prime Ministerial directive, were arrived at between the two departments on the use of section 33 of the Fisheries Act. This marriage of convenience, however, has never proved satisfactory to either of the parties, whose ministers were held accountable by two different constituencies, who often hold different interpretations as to how the powers of the Fisheries Act should be used. Those administrative arrangements were nevertheless recognized as temporary, pending a new legislative base for DOE which, ideally, would be based on a clear statement of national environmental policy. Such a policy was never officially considered, partly as a result of the many changes of ministers and, also, of four changes of government since.

In the early 1980's, much of the public and political considerations focused on generating economic recovery from the worst economic recession since the 1930's. Environmental considerations for economic policy makers were secondary and often considered to be expensive "add-ons" which could be temporarily postponed. The Quebec Referendum and the constitutional negotiations also dominated much of the remaining public agenda both at the federal and provincial levels. Yet, DOE's constituency demanded a stronger environmental ethic from governments, placing successive Ministers of the Environment in an increasingly difficult position within Cabinet, with the provinces and with their own constituency.

Environmental issues were becoming much more broadly-based and complex in terms of concerns, impacts and solutions. Some of these, such as acid rain, urban air quality, water quality and waste disposal, were also shared by many industrialized countries. These new issues placed increased demands on the federal approach in terms of improving public participation and understanding of the issues, of identifying current and potential impacts based on varying levels of scientific understanding, and of interacting and coordinating across a broadening range of stakeholders, within governments and the private sector.

Acid rain and toxic chemicals are cases in point. The former alone involved some twelve federal departments and agencies, all provinces and the territories, five federal-provincial and two federal coordinating committees. Consideration of the the toxic chemicals issues involved some twenty-four federal departments, all provincial governments and some fifty-eight federal Acts, of which twenty-two are of shared ministerial responsibility. The Berger Inquiry to assess the many impacts of the Northern Pipeline, and the significance of its conclusions, is another example.

Public pressure was also brought to bear for the federal government, through DOE, to act as the catalyst for the resolution of other environmental issues requiring joint federal-provincial action:

- PCB's, which were restricted in 1977 and prohibited in 1980, had not been subject to any final destruction program since;

hazardous waste dumps remained a source of high public concern and a health hazard, requiring a comprehensive federal-provincial response for their identification, scheduling and financing of clean-up efforts;

the broad issue of water quality, as addressed by Pearse, including enforcement of existing legislation to prevent pollution, the expansion and upgrading of municipal waste treatment facilities and the provision of enhanced water treatment technologies;

nuclear waste and a system for its storage and disposal;

deforestation and soil salinity.

Other areas, where the federal role was clearly identified and the issue was more focused, included implementing reductions of the lead content in gasoline and setting new standards for light duty automotive emissions.

The federal government had also come under some justified criticism for lengthy delays in the approval process of pesticides, where the competing forces of forest resource management and increasing agricultural production conflicted with strong public health concerns. Provinces also experienced increasing criticism for permitting their use in such applications as forestry spraying.

Increased public concerns were voiced in favour of quality improvements in indoor air and the need for standards such as for the identification of sources and management of the highly toxic dioxin family of chemicals, which was becoming an international problem in the industrialized world.

The 1980's also saw many environmental issues cross international borders, posing cost and benefit allocation dilemmas as well as challenging the limits of scientific understanding. Examples of these included acid rain, CO_2 buildup in the atmosphere and the recently discovered phenomena of Arctic haze.

Ministers of the Environment also had to struggle with federal-provincial conflicts of varying types. For example, on the jurisdictional side in 1983, British Columbia moved

to approve exports of Canadian water, thereby challenging federal authority in this area. This was later studied at some length by the Pearse Inquiry. Again, in early 1984, British Columbia was not willing to accept the federal position on the location of a petrochemical facility, which provided a classic situation where the short-term benefits to the province were in conflict with longer term environmental concerns. Another case involved opposition by Newfoundland to a separate Federal Environment Assessment Panel for the Offshore development - Hibernia Project. This issue was subsequently resolved in the context of the more comprehensive Atlantic Accord and a joint panel was accepted by all parties. In Manitoba, in 1984, the ALCOA Aluminum Smelter issue provided another example of potential conflict between two jurisdictions. While the smelter was initially deemed acceptable for operational use according to provincial criteria, environmental experts claimed that the potential resulting pollution of the Nelson River had not been considered sufficiently.

The Department had also identified newly emerging environmental issues which, in its opinion, required more serious consideration. Examples of these were:

- the rapidly growing science of biotechnology and the growing public concern and uncertainty surrounding it;
- the conflict management that will be necessary to resolve such significant issues as major water diversions, water exports and the priorities for water uses;
- the growing public concern over innocent victim compensation and third-party damages;
- the increasing public demand for stricter enforcement and stiffer penalties.

With so many problems and challenges at hand, something had to be done to position environmental concerns higher in government's political agenda in order to give the environmental stakeholders a stronger voice in the decision-making process at the national level. Popular support was required if any success was to be achieved in negotiating what were perceived to be urgently required national standards. The successive federal Ministers of the Environment became public advocates of environmental causes,

making maximum use of environmental incidents and new worrisome scientific assumptions and findings to draw governments' and the population's attention to environmental concerns.

This new "advocacy" approach undoubtedly resulted in enhanced popular support without which early tangible results on such issues as lead emissions and acid rain would not have been possible. But these decisions also left important aftermaths of negative overtones with many; first within Canada as suggested by the Task Force analysis of Transportation on the Lead Emission Standards and outside when the United States took strong objection to Canada's scientific analysis supporting its acid rain position.

The "advocacy" approach of DOE in the 1980's also created other problems. On the basis of extensive consultations, the initial Study Team on Environment concluded that there existed a strong perception that DOE's general advocacy approach was often used to support the Department's position on specific issues without balancing all considerations. This gave rise to a perception of DOE being single-minded in prescribing solutions and selectively using information to justify its own position. This perception, for many, seriously undermined DOE's credibility as an objective arbitrator of national standards, often involving significant economic trade-offs, and as an effective and credible regulator.

Advocacy also led to perceptions that environmental priorities were being set by public awareness of sporadic incidents. Such an ad hoc approach in priority setting can effectively lead governments to overreact and overspend to resolve problems perceived to be more important than they are in reality; to focus attention on corrective actions rather than maintaining balanced attention to preventive measures which are proven, over time, to be generally less expensive; to create pressures on provincial governments for expensive actions on issues which may or may not constitute real priorities; and, finally, to create regulatory expectations of the federal government which, as described before, has limited constitutional powers in the area.

The "advocacy" approach also led to occasional public conflicts between federal departments on differing scientific environmental interpretation before attempts were

even made for reconciliation. In the opinion of many, including provincial authorities and industry, these situations placed the whole federal government's credibility as an objective environmental regulator at stake, polarizing further the opinions of stakeholders around extreme positions, and thus rendering the task of standard-setting and of complicated federal-provincial negotiations even more difficult. Many therefore questioned whether DOE should act as a policeman, counsel, judge and jury at the same time.

The original Study Team on Environment had noted the multiple roles which the Department was playing in discharging its environmental quality responsibilities; the nature of its mandate concerns with respect to other government departments and the provinces; and the even larger informal mandate given to it by a public which did not wish to be burdened by concepts of jurisdictional responsibilities. Yet, it was noted that, in some instances and for unclear reasons, the department had not fully exercised its existing legislative powers and had seen its horizontal management within the federal government handicapped by the often conflicting roles of advocate and regulator. The initial Study Team made several suggestions which are being considered by the Department, aimed at separating advocacy from the department's other roles and at improving its strategic planning approach to issues and to the discharge of its overall mandate.

The initial Study Team concluded that, as a supplier of environmental information, the department was doing a commendable job. However, some significant improvements towards a more effective and extensive consultation capability were required in terms of openess, consensus seeking and joint participation in decision making with affected parties, and to build more effective relationships with provincial and territorial governments. Several proposals were also made to improve the Department's management of its considerable scientific resources in terms of overall management direction, priority establishment, focusing of effort and evaluation of results.

The original Study Team, however, made no assessment of future issues, nor of the strategic direction of the Department's environmental quality mandate.

Conclusions

A number of important conclusions have been reached from the Study Team's analysis of the manner in which the federal government has discharged its environmental quality mandate since the 1960's and these will guide the Study Team's search for remedies in the following sections of this Report. They are:

1. The existing structure of the federal government assumes that environmental responsibilities should be incorporated into management decisions on specific resources, and that DOE's role should be limited to acting as a horizontal coordinator, a catalyst for relevant federal-provincial collaboration and a relatively neutral arbitrator among often conflicting economic and social interests. At issue, therefore, is whether or not this approach remains valid over time.

2. History demonstrates that as long as environmental costs are considered to be an "add-on", the level of commitments will continue to vary with new emerging priorities. In such a climate, expensive, corrective measures took precedence over less costly, preventive ones.

3. The new linkage between environment and health raises environmental concerns much higher into the global policy agenda of any government. The former "advocacy approach" which created and fanned public concerns and expectations must now be translated into concrete achievements.

4. Narrowing the gaps between scientific measurement and scientific interpretation and between the latter and the ability to design cost-effective corrective/preventive action are the single most important priorities to provide a minimum base to ministers' political decisions, particularly when significant economic trade-offs are at stake. The lack of proper definitional parameters for environmental science activities in diffuse federal departments clearly calls for improved coordination and resource allocation processes.

5. Meanwhile, difficult decisions will have to be made on increasingly complex issues without access to the much-needed scientific and interpretative back-up; a cooperative and consultative mode with provinces and industry in an area of shared constitutional jurisdiction, rather than a confrontational one, must therefore be pursued with vigour and imagination within an improved strategic framework.

II. DEPARTMENTAL SUGGESTIONS FOR A HORIZONTAL AGENDA

To assist the Study Team in identifying the likely longer-term positioning of environmental quality factors in the decision making process the Study Team considered it essential to complement the information it had on some of the key environmental problems the federal government will likely have to meet over the next five to 10 years.

For this purpose, the Study Team sought advice from all departments which have direct interests in environmental matters. The responses of the departments of Agriculture, Consumer and Corporate Affairs, Energy, Mines and Resources, Environment, Fisheries and Oceans, Indian and Northern Development, National Defence, National Health and Welfare, Regional Industrial Expansion, Science and Technology and Transport were sought. The Study Team realized from the outset that these inputs reflected the views of senior officials, which might or might not be shared by their ministers. The Study Team, therefore, paid closer attention to common threads stemming from the replies than it did to specific concerns not necessarily shared by others.

The Study Team asked for the officials' perceptions on the environmentally-related policy issues which the government should be addressing within the next decade; the desirability and methods for the government to improve its priorizing and monitoring of results of previous actions to provide a balanced action plan more sensitive to the various interests at stake; within the existing legal and constitutional regime, alternatives for improving mobilization efforts within the federal government and with the provinces; methods by which the federal government could shift its emphasis from corrective to preventive measures in a context of limited resources at all levels of government; methods by which consensus-seeking could be improved; whether the existing federal and provincial mix of guidelines and regulations is appropriate and any suggestions for improvement.

The Study Team was impressed with the seriousness, depth and forward-looking characteristics of the responses. What emerges from the analysis, presented hereunder, are some very noticeable common threads, which in a great many

respects parallel the findings of the Macdonald Commission, the Pearse Inquiry on Water Quality and views of the Canadian Environmental Advisory Council. These reports were of considerable assistance to the Study Team in the development of its tentative government policy agenda on environmental quality in terms of forecast strategic and horizontal challenges.

Legislative priorities foreseen include amendments to the Environmental Contaminants Act and Hazardous Products Act. They identified the need for new legislation on safe drinking water.

Among the priority issues in environmental quality management which senior officials foresaw as requiring concerted efforts in the next few years are: life-cycle management of toxic substances, including nuclear wastes; acid rain and other airborne pollutants; climate modification including CO_2 build-up and arctic haze; water quality, municipal waste water treatment, major river dams and river diversions, with linkages to sovereignty, water exports and climactic change; soil quality, deforestation, soil stabilization, run-off and siltation; motor vehicle emissions controls, both lead and nitrous oxide; accidental and natural disasters, including oil spills, toxic and nuclear waste leaks; hydrocarbon development and transportation in the North; conservation; and indoor air quality.

If interested departments treated the management of broad environmental policy priorities from their unique perspectives and using different approaches and examples, nevertheless a broad consensus is clear from their comments. Whether they are suggesting new allocations of responsibilities between the federal and provincial governments, a different role for the federal government, devolution of regulatory/enforcement powers, new relationships within the federal government, revised approaches to the integration of economic, environmental and social considerations or a shift from reactive/corrective responses to an anticipatory/preventive approach, what emerges from their views represents a suggested new role and orientation for the federal government, DOE and other federal departments.

At the base of many of the submissions was the view that there must be a searching examination by the federal government and, in an open, consultative process, between it and the provinces to define the federal role and responsibilities and those of the provinces in the management and delivery of environmental quality programs. Explicitly and implicitly, their approach would be to define cooperatively the proper limits of the federal mandate and to rely more on the provinces than heretofore. The various suggestions of senior officials regarding the federal environmental mandate and role are that:

a) its mandate should cover those areas where the federal government is best able to provide services in the interests of good government and cost effectiveness, and where the provincial mandate does not apply;

b) in general terms, it should provide national leadership and develop a more extensive coordinating role, which would seek national consensus; identify national priorities; achieve concerted action through closer relationships with the provinces; assist provinces and industry with program implementation; represent the views of the populace, including Native peoples; support sovereignty and the national interest;

c) in more specific terms, it should seek to achieve the objectives and modalities of the above by coordinating the development and enunciation of a National Environmental Policy. It should lead the movement from environmental quality management policies that are reactive and corrective in approach to ones that are anticipatory and preventive. It should lead the cooperative approach to the development and promulgation of a national system of environmental quality base standards. It should maintain a strong federal presence within its own jurisdiction, including but not restricted to, managing resource uses in the federal jurisdiction, water quality, fish habitat protection, LRTAP, migratory birds, resolution of interprovincial issues and disputes, international issues, the maintenance of northern ecosystem quality and the interface of aboriginal rights with environmental management, the protection of Indian lands, waters and resources, and improved mechanisms to enforce Canada/USA agreements;

d) the federal government should engage in integrated resource-use planning with the provinces;

e) it should conduct environmentally-related research, develop a comprehensive data base and ensure fullest dissemination of the results of science;

f) it should encourage and foster economic development consistent with preservation of the environment, concern for public health and safety and social goals.

Several of the respondents expressed views about the role and mandate of DOE itself. There is a shared view that DOE must be the leader and coordinator within the federal government on environmental quality issues, continuing to exercise broad horizontal powers. A number of senior officials strongly supported the Macdonald Commission recommendation to establish an "Environmental Council of Canada," which might be styled on the Economic Council of Canada and could undertake inter alia: the provision of information and advice about hazards that are high national or regional priorities; the development of a recommended agenda for national action on priority issues; the monitoring of progress by provinces and federal departments; the preparation of National Reports on the State of the Environment; the provision of advice to the Minister of the Environment and to all levels of government; the fostering of consensus and informed participation.

It was suggested the above be bolstered by new national consultative mechanisms, including a revitalized National Council of Resource and Environment Ministers.

Interested departments expressed the strong view that there needs to be an integrated approach to the reconciliation of economic development and environmental quality issues at the program level in sectoral departments, with due regard for development, resource management, environmental, technological and human health factors. Some suggested, as Macdonald does, the development of new social and economic accounting systems that would include conventional economic indicators and also such concerns as environmental degradation, health, forest degradation and the costs of restoring a damaged environment. The application of risk/benefit analysis was also suggested in this context.

There was also support for greater use of federal-provincial agreements, for closer adherence to the "user/polluter-pays" principle, for economic incentives for industry to stimulate environmental preservation, for relating Environmental Assessment and Review Process (EARP) activities more closely to other federal processes, e.g. N.E.B., and for joint federal-provincial approaches to EARP processes. One novel suggestion was for the instituting of an "ombudsman" in each of the provinces, reporting to the Premier on environmental matters of concern to the public.

Finally, there was recognition of the need for new omnibus, horizontal legislation on the environment reflecting the resultant new approach and to enable the federal government to address more effectively both current and emerging national problems. One person suggested that such legislation should allow for the Minister of the Environment to function as the "Auditor General" for environmental matters.

Running throughout the respondents' comments are the repeated themes of consensus-building and cooperation. Heavy emphasis on the need for building a broad national consensus among governments, industry, ENGO's and the general public is reflected in their approaches to elaborating a national environmental policy, defining roles, preparing federal omnibus environmental legislation, determining and agreeing on priorities, putting in place new consultation mechanisms and the enunciation of national minimum standards for environmental quality. Specific cooperative activities were suggested and the promotion of understanding, based on awareness and reliable evidence, was seen as a further major element in the attainment of a national consensus. It was nevertheless recognized that "societal consensus" is not always necessary nor possible. This may be particularly so on single, localized issues, or where opinion has become highly polarized.

Respondents felt strongly about the need for a strengthened environmental data base. Increased knowledge of hazards, risks and remedies must be sought. New remedies, both economic and technologically sound, must be pursued. Research and development activities must be considerably increased with both encouragement through tax incentives for industry and a commitment from industry to share in the costs.

Reliable scientific information must be disseminated to all interested parties - governments, industry and the public - to foster more informed participation, to improve priority setting, to counter over-reaction and to encourage the preventive approach. There was a suggestion for the establishment of an environmental research council to advise on research and development needs and on research priorities. A parallel suggestion was for a national agency to undertake research, gather data and publish findings related to health, diseases, lifestyle, diet, occupation, location and other variables. Another department noted that, while each large department requires a nucleus of staff to manage all aspects of its environment policy and programs, it would be wasteful to have each department maintain a staff of scientific experts as well as regulatory/legislative experts for its own purpose and that these services could and should be provided by one agency (DOE) for all departments and the public. Finally, the possibility was raised of reactivating the Interdepartmental Committee of Science ADM's to improve interdepartmental consideration of environmental science policy in a forum where major overlapping responsibility issues could be discussed and where integration of environmental policy could be integrated with the government's science and technology policies.

The commonality in the approach of the respondents to the management of legislation is striking. They strongly advocate that, in the future, more of the regulation and enforcement activity take place at the provincial level. This is linked by them to a variety of themes, including:

- the setting of national base standards for legislative action, regulation and enforcement by the provinces;

- the maintenance of a strong federal legislative presence within the federal jurisdiction, including international and interprovincial responsibilities;

- streamlining and consolidation of regulations, including the minimization of duplication and overlaps;

- cooperation and effectiveness;

- continued devolution to the provinces, where possible and desirable, of the responsibility for the carrying out of federal programs.

Respondents were also concerned that no excessive time lags be introduced into the regulatory process and, in combination with the preferred course of maintaining the emerging approach of voluntary compliance with negotiated guidelines, were generally not in favour of a legalistic, confrontational approach, as typified by the Environmental Protection Agency in the United States.

Conclusions

There are a number of major themes which flow out of the above comments from interested departments, which share marked commonality in their views:

1. Respondents were considerably influenced by Macdonald and his plea for a fuller integration of environment in the more global decision-making process.

2. Environmental progress would best be achieved through negotiations, incentives, priority setting, informed public participation, consensus and the elaborating of a national environmental policy, rather than relying solely on a top-down, punitive regulatory approach.

3. Officials conceded that the federal government must show leadership where its constitutional responsibilities are obvious and lead the way to preventive/anticipatory approaches; however, federal and provincial environmental assessment and review processes should be harmonized, where possible.

4. It was felt that provinces should be more fully involved in the delivery of environmental quality measures even to the extent of administering relevant federal legislation and regulations including much-needed new standards.

5. Environmental science must be better harnessed and coordinated and, in this context, a comprehensive data base is required.

A CONCEPTUAL FEDERAL APPROACH TO ITS ENVIRONMENTAL QUALITY MANDATE

III. Managing Environmental Policy Within an Economic Framework

Organizational changes made by successive federal governments since 1971 and recently reconfirmed with the transfer of forestry responsibilities to Agriculture Canada clearly reflect deliberate decisions to also entrust to the managers of renewable resources the responsibility to protect the relevant environment of that resource. The Study Team supports this traditional allocation of responsibilities for a number of reasons.

First, to admit that Canada will always need a minister with primary responsibility for the environment is to admit that full integration of environmental cost/benefit factors into the economic equation will never be achieved. Yet, all current national and international public policy literature on this subject calls for fuller integration of environmental and economic considerations on a global basis.

Second, it is usually considerably less expensive to incorporate environmental concerns at the planning stage of sectoral economic decisions than it is to take corrective action after damage has occurred. This principle was already recognized in the 1979 legislation, in the EARP Order in Council and is now even more timely, given that Canada is undergoing a major restructuring of some of its most important industries.

Third, as signalled by the Macdonald Commission which spent considerable efforts linking Canada's environmental trends to Canada's longer term economic and political outlook, the more the private sector incorporates environmental costs on a current basis into the basic accounting structures, the less these costs will be deferred or left for the public sector to assume at some later stage. The lack of previous attention to reforestation is a striking illustration of this point.

The Study Team is convinced that, sooner or later, the economic rent of commonly held properties such as air and water will be acknowledged by governments, industry and the

people and the sooner it comes about, the better positioned Canada will be to face tomorrow's intense international competitiveness. It concludes, therefore, that it is of utmost importance that sectoral departments, and eventually provincial governments, recognize as a basic principle, that the environment is not a free good. The ongoing management approach by governments must be designed so as to gradually induce the various constituencies to share this basic understanding and to accept some of the negative short-term consequences accordingly.

For these reasons, the Study Team concludes that, from a longer term perspective, it would be counter-productive to entrust DOE with renewable resource management responsibilities for the primary purpose of fulfilling its environmental quality mandate. To argue otherwise would raise the question as to whether integrated resource management, including environmental considerations, of Canada's renewable and non-renewable resources might not best be achieved under a super-ministry responsible for all resources. For a number of reasons referred to when reviewing DOE's history, including constitutional ones, the Study Team does not consider this to be a very practical and acceptable approach. As a corollary, it is imperative that every effort be made to induce sectoral departments to use existing or new leverages to improve the balance between environmental, economic and social objectives. If it is accepted that, over time, Canada will have no choice but to better integrate environmental and economic decisions, then every relevant short term decision, or at least an overwhelming majority of these, must be consistent with this aim.

The Study Team therefore had to examine the economics of the environment, paying due regard to the longer-term, freer trade objectives of the government. The economics of environmental issues have been very well explored and an extensive literature is available. The Study Team has drawn on only the most pertinent sources. In its examination of economic issues, the Study Team has tried to provide a suggested basis for further actions and to highlight some possible directions.

a) The Internalization of Environmental Costs

The economic theory of environmental issues is primarily concerned with what is known as external benefits

and costs. These are benefits and costs that are not normally reflected in the profit and loss statements or balance sheets of the primary polluter or of the beneficiary of anti-pollution measures. For example, the cost of polluted air is not normally included in the calculations of a smelter operation. At the same time, the benefit of clean air is not reflected in the income flows of consumers of clean air. In other words, there is no natural market for environmental costs and benefits. In effect, then, society, through governments, has to impose certain market responses on the market system if environmental benefits are to be achieved.

Because environmental benefits have no market to establish values and costs, there is no automatic provision of quantitative data to guide the allocation of resources for environmental purposes. How valuable is clean water? How valuable is clean air? Even if the benefits are suspected to be great in total, it is still an arbitrary decision to place a value on them. More importantly, how are the benefits distributed? If they are to be paid for, how does one collect? If the costs of maintaining good environmental standards are identifiable, who should pay them? Should it be the general public who might be seen as the beneficiaries? Or the consumers of the products whose production led to the creation of the pollution which must be curtailed? All of these questions ultimately require an arbitrary decision of some sort. Because quantitative values for benefits and costs tend to be arbitrary, analysis and argument about environmental issues often centre around the validity of the quantitative figures. Good, acceptable data is therefore one of the prime requirements for improving environmental decision-making.

There are two main types of cost which are important for environmental issues. The first is the actual cost of pollution control to maintain various levels of ambient environmental quality. The second type is the cost to society of not maintaining adequate environmental controls. Each of these two types of cost is discussed below.

Cost of pollution control: Costs of meeting environmental standards are fairly well established, although changes in technology can alter these costs quite rapidly. Keeping up to "state-of-the-art" technology can therefore be fairly challenging. The available data suggest

that the average cost of maintaining environmental standards is relatively modest and does not impose an inordinate cost burden on industry or consumers; it would fall in the range of 2-3% of final market prices for most products.

There are, however, some very notable special cases, usually associated with smelting, power generation, or chemical processes of some sort. In these cases, the additional costs for pollution control can range up to 10% of final product value, and this can pose a severe problem for an industry, especially if international competitors do not have to meet the same standards. These industries also happen to be important in a North American, and particularly, in a Canadian context.

There is very poor data on Canada/U.S. comparisons of environmental standards for industry. Data gathered by the OECD in the early 1970's, and some more recent observations suggest that the standards in the two countries are roughly equivalent. There is some doubt, however, whether the enforcement of the standards is equally rigorous. In addition, while current U.S. production is governed by environmental standards that may be roughly equivalent to those in Canada, the costs for cleaning up the backlog of waste disposal sites is far greater in the United States, and the threat to ground-water supplies is far more serious.

The rough equivalences of current operating standards in the two countries suggest that there would be no major cost advantage or disadvantage to either Canadian or U.S. industry in the event of an agreement on a more open trading arrangement. The major points at issue would concern enforcement standards, which should be roughly equivalent, and a number of special cases such as power generation or chemicals where an industry-by-industry assessment and agreement might be necessary.

The issue of prime importance would appear to be some understanding on the types of policies and programs that are not considered to be an infringement of international rules against subsidies to industries. To examine this issue it is necessary to understand how pollution control costs are absorbed into the cost structure of firms or of society.

Pollution control measures are usually incorporated into the production process in two ways. The first is through new capital equipment that controls or alters waste

materials into more benign products. The second is to change the whole production process so that the volume of waste is reduced. This latter approach often has the advantage that it improves the efficiency and reduces the costs of the firm.

In either case, substantial new investment is required, and it is through an investment process that environmental standards are incorporated into the operations of a firm. The question then concerns how these investment costs are covered. In general, there are two ways that the costs can be covered. The first is to force the firm to swallow the cost of pollution control into its own investment expenditure and thus into its own cost structure; in other words, the firm is made to internalize the external costs. The second approach is for society to subsidize the investment from public funds, thus allowing the cost structure of the firm to remain low, and the price of the firm's products to consumers, whether Canadian or foreign, do not have to carry the cost of the pollution control.

From the point of view of society as a whole, it does not matter too much which one of these approaches is taken, although there may be some differences in the efficiency of the two processes. The environmental benefits will be achieved and the costs will appear either in the accounts of the firm or in the accounts of society. But it can make a great deal of difference to the firm, especially if it is operating under a regime which requires it to internalize the costs, and is competing with a firm in another country with a different regime where the costs are absorbed by society. Thus, even if the cost burdens in the two societies are roughly identical, differing accounting procedures can lead to very severe competitive dislocations at the level of the firm. In any approach to a freer trading arrangement, therefore, there will be significant importance attached to both Canada and the U.S. adopting the same approach to accounting for the cost of pollution control. Both must either internalize the cost to firms, or both must externalize equally the cost to society. Different approaches could be needed from industry to industry, but these differences would have to be very carefully specified.

In general, there are three approaches to implementing and enforcing environmental standards. The first is to establish standards by regulation and force firms to meet

them under the threat of court action and penalties. The second approach is to impose a charge of some sort on the pollution emissions of the firm, and raise the charge to the point where it pays the firm to invest to reduce its emissions. Both of these approaches force the firm to internalize the cost of pollution control into its own cost structure. The third approach is to provide public subsidies to firms to finance equipment to control and reduce emmisions, or to clean up the effects of past emissions. This approach places the cost in the public accounts, and leaves the cost structure of the firm relatively unaffected.

Each of these approaches has advantages and disadvantages and these will be noted briefly below. But it is relevant to note that both the United States and, to a lesser extent, Canada have relied on the regulatory approach to environmental control: that is, both have relied on approaches that require firms, under threat of legal penalties, to internalize the cost of environmental benefits. In this sense, the two countries have a relatively harmonious approach. But the harmony tends to break down for a number of reasons. If the enforcement under the law and regulations is not vigorous, then in fact, the costs are avoided. Secondly, if the court procedure is prolonged and the penalties minimal, then the major costs are also avoided. Thirdly, government support for R&D into pollution control, and special tax write-offs can, in effect, transfer internal costs into external or social costs, even though the activity appears to take place within the accounts of the firm. Thus regimes for direct R&D support or depreciation allowances can raise great disharmonies. An equitable structure within a freer trade arrangement would require some degree of harmonization on these issues as well.

Social costs of not controlling pollution: In general, the commonly accepted assessment is that the costs of not controlling pollution are very high. The converse of this statement is that the benefits of pollution control are very high. Thus there is a general presumption that the social benefit-cost ratio of environmental expenditures is very high. It is difficult to place an actual value on this ratio since the benefits are normally very widespread and are of the nature of a public good (clean air or clean water) for which values have not been established. But even

if a very small value per person is placed on these public goods, for example, 25 cents per day per person for clean air or clean water, the total value to society soon becomes extremely large. Thus prudent assumptions about value can still produce large benefits for society. For this reason one can accept the basic premise that the benefit/cost ratio for environmental expenditures is high.

Alternatives

Each of the three approaches to environmental control has advantages and disadvantages. These characteristics have very important implications for how environmental policy can be designed and implemented.

The regulatory approach is the dominant approach in the United States, and, to a lesser degree in Canada. It is essentially a legal approach, under which regulations are established that set measurable quantitative standards for emissions into the environment which must be met, usually by a deadline date. The major advantage of the system is that the target standards can be simple, clear, unequivocal and easy to understand by the public. They can also be made flexible and adjustable to the requirements of firms, regions or industries, but this increases the complexity and the administrative burden of enforcing them.

There are a number of serious difficulties with the regulatory approach. The first is that the sanctions are often imposed primarily through court actions, and action against each breach of regulations must be the subject of a new court action. Given the difficulty and length of time to implement each action through the court system, the sanctions or fines levied can result in very minimal penalties. Even if legal costs are included, the total cost to the polluter can represent a modest pollution fee. The longer each charge can be prolonged in the court system, the less frequently the fee must be paid, so that the regulatory approach frequently winds up as a battle between lawyers to delay and minimize the payment of pollution charges. In addition, the cost of such actions to the regulator is high.

A second difficulty with regulation (although it is a difficulty common to all approaches to environmental control) is that good, dependable monitoring of pollution levels is required. Furthermore, the monitoring must be

performed at each individual polluting site if sanctions are to be applied effectively through the courts. Standards of evidence require good monitoring and dependable quantitative data.

A third problem with controls is that, while effective in many cases in forcing polluters to reach a set standard of pollution emission, the system does not encourage them to go beyond the control standard. They will design to that standard. Both firms that find it costly and those that find it relatively easy will design and invest to the same standard. It may ultimately force the high cost firm out of business, while the low cost firm could have achieved a higher standard but has no incentive to do so. In a very fundamental sense then, regulation leads to an inefficient allocation of resources toward pollution control, as well as placing governments in the difficult position of making decisions on the absolute level of standards.

The public subsidy approach provides grants, indirect subsidies or special tax incentives to polluters to help them cover the expense of reducing their polluting emissions. This approach also has the advantage of regulation in that it appears to be a direct and simple attack on the problem. The approach also has a number of serious disadvantages, however. Since it is a direct contribution to a specific expenditure to control pollution, the approach emphasizes "add-on" pollution control equipment rather than basic changes in process that might be more efficient. This produces an overall approach that may be more expensive than necessary to achieve the objective.

The subsidy approach, unless accompanied by mandatory regulations, is of the nature of a voluntary program. There is little incentive for the polluter to undertake the activity, even if the money is forthcoming. Such an approach thus must normally be used in tandem with regulatory standards. Even so, it would sometimes lead firms to hold out and bargain for their share of the available public funds with the implicit understanding that failure to obtain funds enables them to take the position that it is morally acceptable for them to take inadequate or no steps.

Perhaps the most important characteristic and potential disadvantage is that subsidies leave the cost of countering pollution external to the firm. While attractive to the

firm in some ways, the subsidies also can be considered as general support to the firm and therefore might be subject to countervail action in the U.S. market. For many Canadian industries, this position would be a very serious disadvantage.

The third approach is to impose a tax or charge of some kind on pollution emissions. This would not be an appropriate measure in cases where a total ban is required - such as for highly toxic chemicals. But it would be appropriate for those pollutants whose emissions need to be balanced with the capacity of the natural environment to deal with them. Although several variants of a tax system can be devised, the basic and simplest system is to impose a fee on each unit of pollutant emitted by a plant.

This approach to pollution control has a number of problems which can be overcome, but which are nevertheless important. The first is that the approach requires a highly dependable monitoring system. Each source of a particular type of pollution would have to be identified and a dependable measuring process and system put in place. The measuring process would have to be regular. Once this capacity is installed, the administrative burden of operating the system would be relatively modest.

A second problem relates to the establishment of the level of the tax. If the initial tax is too high, then it might impose an unbearable burden to the polluter, leading to plant closures and a loss of credibility for the program. If the tax is set too low then there will be inadequate incentive to adopt pollution control measures and the tax will simply be a cost burden on the firm. Thus a capacity must exist to adjust the rates over time so that they achieve the desired environmental standards. It would probably be better to start low and raise the level of charges, either according to a preset schedule, or as experience suggests. In the latter case, the process of changing the rates should not be too cumbersome.

Against these problems there are a considerable number of advantages. The main one is that a charge on emissions places continuous pressure on the polluter to reduce emissions, and it does so in a way that feeds directly into his calculations on unit costs. As the charges are raised, and as the enterprise looks for ways to reduce unit costs,

measures to reduce emission charges take on a priority equal to the reduction of any other cost. Pollution control considerations are then built right in to the normal operational considerations of the enterprise.

A second major advantage is that this approach leaves each enterprise to respond to the need for lower emissions in its most efficient way, and to go as far as is warranted by the costs. Thus the enterprise could install special equipment, change its production process, change its product mix or a combination of these approaches. If it pays the firm to reduce emissions by 25%, it will do so; if it pays to reduce emissions by 80%, it will do so. As a result, each degree of emission control will be achieved at the minimum cost to society and in the most efficient way for both the firm and the economy as a whole. To the extent that such an approach will be successful, ways should be found to encourage the Canadian technology and manufacturing sectors to sell their pollution control products and approaches at home and abroad.

The tax or charge on emissions is a flexible enough approach that the charge can be varied according to the type of emissions, or the region or area of the country. Thus areas more sensitive to polluting materials could be subjected to a higher charge and incentive than others. In addition, the charge could be imposed in a flexible way over time so that enterprises could have time to adjust and plan for measures to avoid paying much of the charge.

From the point of view of the government imposing the charge, the approach has the advantage that it creates revenue rather than increasing costs, either of an administrative nature as for regulation, or program expenditures for grant or subsidy programs. It would be important, however, to keep the purpose of the tax or charge clearly in mind. The purpose must be to reduce pollution, and not to raise revenues for the government concerned. Thus the principal factor guiding the establishment of the level of charges must be the achievement of a certain target quality of the environment. It must not be the maximization of revenues; indeed any large revenues over an extended period of time would suggest an inappropriate level of charges.

Within the context of Canada/U.S. trade relations, the major advantage of a charge or tax approach is that it would not be countervailable. It would be virtually impossible to interpret a charge as a subsidy to the firm. The total cost of the pollution program must be internalized in the costs of the enterprise in a similar fashion and to the extent that costs of meeting regulations are internalized in the United States. The approach would thus be fundamentally harmonious with the approach to environmental control that exists in the United States.

There are a number of variations to the "emission charges" approach suggested above. In addition to the straight tax on emission units that was used to illustrate the principle, there are three major variations that warrant a special note:

(a) An exempt base of emissions for which no charge would be imposed. This approach reduces the cost to the firm and focusses the emission charge on those emissions that might be considered in excess of an acceptable standard. The disadvantage is that there is no incentive for firms to reduce emission below the standard level even if it would be relatively easy for them to do so. Thus the approach loses a potential for low cost environmental improvement.

(b) A second variation is to combine an emission charge with a mandatory maximum emission level that a plant cannot exceed. This approach has the advantage that a continuous incentive is present to reduce pollution emissions but it also forces a plant to meet standards that provide some minimum protection to the environment and the health of the public in the vicinity of the plant. The disadvantage is that it removes some flexibility from the plant management since they will have to achieve a specified level of emission control even if their particular circumstances make it costly for them to do so.

(c) A third variation of the charges is to sell "rights to pollute" rather than to place a tax on emissions. This approach is based on the premise that the environment in any particular locale can absorb and process a certain amount of many levels of pollutants in its own way. Once this absorption

level is determined, then those absorbable units of pollution can be sold. Industrial plants, which did not obtain a pollution right, would have to achieve perfect pollution control in order to operate. Plants that improve their pollution control could sell units they no longer required so that there would be a market for the units. While the variation has a number of advantages similar to the tax on emissions, in that there is a continuous incentive to reduce emissions, the approach has the disadvantage of having both the appearance and the reality of being the right to pollute. This is also true of any regulatory standard higher than zero. It also has the serious disadvantage that once the pollution rights are well taken up there is an enormous barrier to new industrial enterprises entering the area. To do so they would have to achieve perfect pollution control, a very expensive proposition. This approach thus provides an opportunity to the first holders of the pollution rights to monopolize the field. If the pollution rights rise significantly in value, as is quite possible, the original holders stand to gain significant monopoly profits after they have reduced emissions. However, allowing large monopoly profits to be made on the rights to pollute does not have the ring of good public policy.

The conclusion of this analysis is that the three approaches to environmental control are not mutually exclusive, but that more emphasis might be placed on a tax or emission charge approach where appropriate. Regulation would have to be continued for highly toxic products for which a total ban or near total ban is appropriate. The move to an emission charge approach would be governed by the availability of a good quantification and monitoring capacity. Given these preconditions, a tax or charge on emissions would produce a more effective incentive for the firm to take antipollution measures. The measures themselves would be the most cost-effective for each situation, and thus for the nation as a whole. The approach would be compatible with U.S. approaches and not countervailable.

The above approach is fully compatible and even complementary to one of the most important recommendations formulated by the Pearse Inquiry, which urged the federal

government to encourage water conservation and demand better management practices by explicitly endorsing the principle that beneficiaries should pay for water and water services by means of appropriate prices. If this recommendation were ever accepted and if it were implemented with provincial support, then clearly popular pressure would be brought to bear on industry and other stakeholders to take the necessary measures to reduce effluent pollution resulting in lesser incremental treatment costs in the longer term.

It is clear that provincial support for the above concepts is crucial and provinces would undoubtedly make a strong case to be the sole recipients of whatever revenues are generated from the pricing of water, given their constitutional responsibilities over natural resources and municipalities. It would be surprising were they not to take the same position over emission charges. As explained earlier, emission charges should not be considered as a vehicle to generate revenue but only as a pollution abatement tool. The federal government might not be the beneficiary of this new mechanism of revenue generation, but the approach could alleviate some of the pressures being mounted on the federal government to participate in direct expenditures or subsidies through a Super Fund, for provincial clean-up efforts. A case could therefore be made that the overall federal approach with the provinces should be to induce them to share the above principle and to use whatever proceeds would flow out of these charges as a means to finance those significant expenditures which they should incur on various, expensive corrective initiatives which they must undertake on such urgent issues as waste clean-ups.

b) The Adoption of Environmental Quality Ambient and Emission Standards

The proposal to introduce a more pro-active economic incentive approach to pollution abatement requires a pro-active parallel approach to the establishment by the provinces and the federal government of a national system of environmental standards to protect human and ecological health from long-term environmental degradation. As might be anticipated, all other countries reviewed by the Study Team employ some form of national environmental standards.

The principle which should underlie the recommended national system of environmental ambient and emission standards is that these standards would be the environmental equivalent of other equalization measures which would provide the same base standards of protection from environmental pollution to all Canadians. The environmental base standards in this national system would be measurable indicators of pollution that would represent the maximum permitted level for:

- a specific contaminant level by medium - air, water or soil (an ambient standard);
- overall quality indicators for a medium (e.g. ambient pollution levels for all pollutants which can be tolerated over a fixed time period without harmful effects);
- polluting effluents, both by total amount and by concentration (an emission standard).

The basis of credible, authoritative standards rests on the technical data identifying the pollutant and its amount, and in scientific knowledge of its effects. Both types of standards must reflect state-of-the-art knowledge of both the effects of the pollutant and the technology for abatement.

The process whereby these base ambient and emission standards are to be developed must be balanced, comprehensive and scientifically sound, with an understanding and consideration of their social and economic impacts. Such considerations must incorporate an understanding of "who pays" and "who really pays". The scientific discipline employed must be capable of withstanding peer review and be formulated using acceptable criteria.

In setting any standard, it should be understood that there will always be two extreme views between which a compromise will be necessary. The first extreme holds that the mere presence of a pollutant is unacceptable; the other believes that a combination of available data, current knowledge and good risk management can be used to establish an acceptable level of risk. The former may trigger an unwillingness by citizens to accept any risk whatsoever as

evidenced in the so-called "not in my backyard" syndrome; the latter is usually associated in the minds of some with the "profit motive" of industry, or with fiscal restraint by governments. While these two extremes pose a challenge to the consensus-seeking process, their existence does not pose an insurmountable barrier to developing consensus, given a commitment by the parties to do so.

These base ambient and emission standards, in the Study Team's view, must:

- be monitored, be reviewed periodically and be subject to possible adjustment upwards or downwards in the light of new data, scientific understanding or changing circumstances;
- be subject to adjustment for greater stringency where differences exist in specific local conditions, including geographic, economic, social and health factors and provincial priorities;
- not be driven solely by new, more sensitive detection methods, without corresponding scientific effort to improve understanding and interpretation;
- respect cultural differences and needs, including native food supplies, traditions, public health, degree of regional urbanization and population concentration;
- have regard for the components which go to make up local situations (the industrial and urban mix, geography and ecosystem) and the possible additive or synergistic effects of their effluents and impacts on environmental quality, including such factors as ambient conditions, aquifer sensitivity, endangered species, and differences in capacity to safely absorb effluents;
- contain implementation schedules, where necessary, to reflect the timing of a series of predetermined, decreasing pollution levels to automatically reach the established end-point base standard;
- demonstrate a willingness by the federal government to lead by example and to provide targets for others to emulate by increased stringency on federal property, where appropriate;

- be promulgated in the form of regulations;
- preferably be administered and enforced by the provinces.

There is therefore no alternate method for instituting national base ambient and emission standards except through federal-provincial agreements building on the recommended consensus-seeking, consultative approach with key stakeholders. As these standards must reflect local conditions, they must be negotiated individually with each province covering the component elements of the national system of environmental base standards.

There exist at least 275 federal-provincial agreements relating to the environment, of which 113 are specifically directed at environmental protection. In an attempt to harmonize efforts in this area, some 7 Federal/Provincial Accords were reached in 1975 with Newfoundland, Quebec and British Columbia not opting in. These Accords focused on roles, cooperation, information exchange and cost sharing. The initial Study Team examined the history of federal-provincial negotiations in the area and concluded that, "The experience with the Federal/Provincial Accords on Environmental Quality varied greatly from province to province. In some cases where the need for role clarification was great they helped to harmonize activities while in others they essentially provided a basis for argument. In other cases where existing arrangements were extensive and informal, the Accords merely provided a formal umbrella and were not utilized." The current Study Team attributes the difficulties to several reasons, but particularly to the unclear positioning of environmental concerns within the overall government agenda, which seems to have prevailed at the time. In entering into future negotiations on environmental quality issues, the federal government could negotiate from a particularly advantageous position if it made it clear from the outset that environmental quality issues rank high in its overall priorities and if, in addition, it positioned environmental quality as an integral component of its regional and industrial development objectives.

The Study Team has considered various mechanisms and forums to foster DOE's entrée into the negotiating process on environmental quality issues with individual provinces. The first possibility was the Canadian Council of Resource

and Environment Ministers (CCREM). While CCREM is very effective in general discussions, historically it has not proved to be effective in promoting or negotiating harmonized specific ambient and emission standards. Further, CCREM would not be a suitable mechanism because it is multi-partite rather than bilateral with individual provinces, and the foreseen negotiations would be much more difficult in a group setting than if they were held with individual provinces.

The Study Team also considered the possibility of DOE continuing to undertake these negotiations alone with the individual provinces. The Team has already noted above, however, the findings of the initial study team that this approach has been attempted with only mixed success up to today. Indeed, this should not come as any surprise since one of the prime findings in the overall Task Force on Program Review exercise has been that there are no horizontal corporate memories of the many economic and social trade-offs to which the federal government can resort in its dealings with the provinces on the great variety of sectoral issues. Even if DOE had the policy and political strength to, itself, negotiate successfully with the provinces, the entire federal structure would not be in a position to capitalize on DOE's successes unless DOE's achievements were carried out in the context of other negotiations on other fronts.

c) A Federal-Provincial Regulatory Framework

The urgent need to establish federal-provincial negotiated base standards of environmental quality required the Study Team to give extensive thought to the legislative vehicles which might support them; the Study Team found itself confronted by some hard realities, existing problems and apparent contradictions of considerable magnitude. The Study Team has arrived at a conclusion in this most difficult area.

Agreements between governments, and specifically the base standards of environmental quality, must find substance in legislation and regulations if there are to be compliance and enforcement measures and powers. The basic question then arises as to which existing legislation to use, be it federal or provincial, or whether new legislation is required. Taking the example of water quality, the Study

Team believes that existing federal legislation will suffice. (Water is the example selected because most forms of pollution enter water directly and because of existing problems and controversy.)

One of the most powerful environmental protection laws in Canada is the federal Fisheries Act. Section 33 of this Act has caused enormous controversy and conflict within the federal government and in its relations with the provinces. Section 33 is in fact a small code consisting of several articles within the Fisheries Act, all under the heading of "Injury to Fishing Grounds and Pollution of Waters". The major tenet established by these provisions is that no person shall deposit any deleterious substance of any type or in any amount in water frequented by fish. Together with this general rule is the proviso that the deposit of deleterious substances in water does not amount to a breach of s. 33 if it is authorized by regulations made either pursuant to the Fisheries Act or another federal act. It is most important to note, therefore, and it is fundamental to the following analysis, that any other law or regulation which independently sets a standard allowing even for a minimal deposit of pollutants in waters frequented by fish is thereby contradicting the major tenet outlined above, which may cause tensions with the fisheries sector.

Despite the existence of the possibility of formally endorsing legally accepted control limits for specific types of emissions, only six sets of such regulations have been promulgated under s. 33. The federal government has concluded sectoral agreements which tailor the regulatory regime for six industrial sectors enabling the government not to apply the total prohibition of pollution in section 33. Whereas the release of other effluents triggers what may best be termed absolute liability, release by these six industry sectors of the six effluents authorized renders the releasing party liable only in case of breach of the limits specified in the regulations.

These six agreements reduce the otherwise absolute obligation of these industries not to pollute at all by setting standards for allowable pollution to maintain the degree of environmental protection considered to be both achievable and adequate by the government. These arrangements are equally beneficial because they enable the industrial sectors involved to operate. The six sets of

sectoral regulations cover Chlor-Alkali Mercury Liquid Effluents, Meat and Poultry Products Liquid Effluents, Metal Mining Liquid Effluents, Petroleum Refinery Liquid Effluents, Potato Processing Plant Liquid Effluents and Pulp and Paper Effluents.

Before continuing with the discussion of s. 33, it is important to understand the administrative arrangements for s. 33. Until the 1979 split of DFO from DOE, the Fisheries Act fell under the full authority of the Minister of the Environment. With the split, the Minister of the Environment lost control of his single most powerful pollution abatement tool to the Minister of Fisheries and Oceans who has a different constituency to satisfy.

Nevertheless, interim arrangements were made, pursuant to a Prime Ministerial instruction and a memorandum of understanding between the deputy ministers of DOE and DFO, for continued administration of s. 33 by DOE until a new legislative tool was put in place. These arrangements, which also are affected by some provinces having entered into agreements to enforce s. 33, have caused understandable friction between the two departments. Section 33 also causes tensions with provinces since the water itself is a resource under provincial constitutional purview and because the effect of s. 33 can be likened to a "Damocles' sword". But discussions since to resolve the interim arrangements and find a new legislative vehicle have been unsuccessful. The Study Team realizes that such a search will be controversial because any legislation or regulation which permits pollution to occur in a fisheries habitat will evoke strong criticism from that sector. Therefore, any agreement to regulate allowable pollution under another act, such as the Canada Water Act, can evoke such criticism.

The language of s. 33 (4) of the Fisheries Act does not allow for any regulations to be made governing pollution of a fisheries habitat except under a federal act. This could not be done under any provincial legislation. The only other solution to this dilemma, which the Study Team cannot recommend, would be to remove the absolute prohibition from s. 33. Such a general approach would not be acceptable to the fisheries constituency nor would it be desirable for the federal government to give up this important and final vehicle which supports its constitutional responsibility for fisheries.

To return to the matter of standards, a new national system of base environmental quality standards has been suggested earlier. Early pursuit of them is foreseen. It will therefore be important that the process of negotiations focus on the standards of quality themselves and not on the legislative authority to be used to bring them into force. If the parties prefer to use the Canada Water Act, that should be agreed only at the conclusion of the standards-setting exercise. The federal government will therefore have to undertake, in these negotiations, not to issue unilaterally new sectoral regulations pursuant to s. 33 (4), except in an emergency situation, but to use it to issue further regulations only if the parties have agreed on the standards and the legislative vehicle. Otherwise, the provinces may be reluctant to even enter into negotiations on standards, as they appear to have been reluctant to do until now under the Canada Water Act.

It must also be recognized that standards for other mediums will have to be negotiated with reference to specific enabling legislation. In this regard, the Clean Air Act should be examined, as noted elsewhere, to ensure that it does not transgress provincial jurisdiction.

In its review the Study Team was unable to determine why the federal government stopped negotiating the sectoral agreements under s. 33 after only six had been concluded. Many interesting reasons were advanced, but the Study Team has now realized that they pale beside a full understanding of the impact of s. 33. But one of those purported reasons is the key to the future. If one of those reasons was friction between federal departments and a concomitant lack of will on the part of federal ministers, it must be accepted now that the federal government and interested ministers can only act by agreeing to a process that, at its very heart, involves the ultimate powers of s. 33. The full participation of the Minister of Fisheries and Oceans in the consensus-seeking process and his/her compliance with the ultimate compromises is therefore essential.

It may well be that one of the positive outgrowths of the continued use of s. 33 or the use of the Canada Water Act will be the establishment of new sectoral pollution ambient and emission standards, <u>together</u> with the provinces. To the extent today that it might be difficult, or even constitutionally impossible, to create new water quality legislation for DOE with positive powers even

approaching those of the Fisheries Act, once a national consensus on new water quality standards is reached through negotiations, it might then be easier to develop new federal and provincial legislation on water that would be stronger because of the pre-existing agreements on new standards.

What is required, therefore, is agreement to proceed in the individual negotiations with provinces on new standards, coupled with a firm agreement and understanding by the federal parties of the unique role and requirements of s. 33 and the sending of a message to the provinces that, except under exceptional circumstances, s. 33 will not be used in a unilateral way but as one federal enabling vehicle.

What will result therefrom will be a matrix of federal and provincial legislation, which could be different from province to province, at least in its initial stage, until all provincial governments enact their own supporting pieces of legislation. What will be required, therefore, is a national compliance policy, and an effective and reliable national monitoring of compliance, to ensure inter-regional consistency in the administration of regulations. This issue will be addressed later in this report.

d) Environment in the Economic and Regional Development Agreement Framework

The foregoing analysis and conclusions regarding the necessary integration of environmental concerns at the front-end of economic decisions, the establishment of emission charges, the negotiation of environmental standards, the selection of the regulatory mechanism for implementation, and the inherent requirement for joint federal and provincial agreement on all of the above lead to the inevitable conclusion that there is only one vehicle suitable for this process. The Economic and Regional Development Agreements 1984-94 provide a most flexible and integrated planning and delivery instrument for a horizontal and strategic approach to the achievement of environmental quality improvements over the longer term. The Study Team, therefore, reviewed those ERDA agreements and sub-agreements signed to date to obtain an appreciation of the extent to which environmental quality issues have been addressed.

Considering the importance of the amounts channelled through ERDA subsidiary agreements, estimated at over $2 billion in federal commitments to the end of the decade, and

given their all-encompassing nature, it should have been expected that ERDA's would have been fully utilized for integrating the consideration of environmental quality issues.

Few ERDA's per se or Course of Action documents mention environment-related issues as strategic priorities. Only Manitoba acknowledges the horizontal importance of environmental issues: "Environmental factors ... may be as important in determining the pace and quality of development in the future as resource-endowments and distance factors were in the past." Otherwise, mention is only made of environmental matters in relation to specific economic development issues. In the Alberta ERDA, such mention is made in relation to National Parks, soil and water conservation and water development; in that with Saskatchewan, in relation to soil, water conservation and irrigation; for New Brunswick, in relation to land conservation and enhancement. The Study Team therefore infers from the above that the linkages between environment and economic development were not uppermost in the minds of federal and provincial negotiators in the ERDA process.

However, several subsidiary agreements make references to environmental issues but not in a systematic way. Soil and water conservation issues are found in several subsidiary agreements. In British Columbia, a $17.5 million program under the Agriculture sub-agreement is devoted mainly to: regional irrigation and water supply systems ($6 million); watershed drainage systems ($6 million); soil conservation and improvement ($3 million); water conservation and improvement ($1.75 million). In Alberta, soil and on-farm water conservation, development and management is mentioned as an item for joint planning in the 1984-85 Course of Action and is identified as a priority in the Agriculture MOU. In Saskatchewan, soil and water constraints are identified as factors in Schedule A of the ERDA. The Course of Action for 1984-85 mentions Soil and Water Conservation as priority items, while the 1985-86 Course of Action refers to an MOU on irrigation. The Agriculture sub-agreement contains $4.5 million for soil conservation and $15.0 million for irrigation. The Agricultural Community Water Infrastructure sub-agreement has funds amounting to $32 million. In Manitoba, the Course of Action for 1984 mentions soil and water conservation issues, whereas the one for 1985 focuses on water services

to rural communities. Water issues also appear as one of the priority planning areas in the planning sub-agreement. Schedule A of the the New Brunswick ERDA contains a mention of land conservation and enhancement and the Agrifood sub-agreement contains an $11.5 million program on water and soil management, including soil erosion. In Prince Edward Island, the Agriculture sub-agreement contains a $4 million component dedicated to soil and water conservation and management.

Other water-related initiatives are also widespread in ERDA sub-agreements. For instance, in Alberta, the 1985-86 Course of Action identifies the Milk River Dam as a candidate for an agreement. In Saskatchewan, a sub-agreement has been signed on the development of water treatment systems for Regina and Moose Jaw, with funds amounting to $10 million. In Prince Edward Island, the 1985-86 Course of Action invites the federal Minister of the Environment to undertake discussions on a Water Development sub-agreement. In Newfoundland, a sub-agreement on the water supply system in the town of Channel-Port-Aux-Basques has been signed, covering funds amounting to $15 million.

National Parks issues are dealt with in two provinces. In Alberta, Schedule A of the ERDA states that "with many national parks within Alberta's boundaries,cooperative action between the federal and provincial governments is required to build upon these natural strengths". As a consequence, national parks are mentioned as joint planning items in the 1984-85 Course of Action and the MOU on Tourism. The Tourism sub-agreement further states that "Any development in the national parks would be consistent with environmental assessment and ensure the absence of disturbances to heritage resources". In Quebec, the Tourism sub-agreement contains a program element with $50 million in assistance for major tourism product development, which inter alia includes support for public projects (parks).

Minerals sub-agreements touch on environmental matters in two provinces. In Manitoba, two program elements with funding of $2.18 million are dedicated to research and development on the reduction of SO_2 emissions. In New Brunswick, a component of the agreement allows for the funding of a $1.7 million pilot plant to experiment with a process to avoid the creation of SO_2.

Finally, in Manitoba, the 1985 Course of Action proposed the conclusion of an agreement on Hydroelectrical Development, designed to foster project coordination, and in particular to "manage environmental concerns".

As the preceding overview suggests, apart from agriculture-related intiatives, much of the programming taking place in the context of the ERDA system does not take environmental quality issues into account and this is particularly so with Quebec and Ontario. Noteworthy is the fact that no industrial development sub-agreements, which are the prime channels of ERDA money, contain explicit references to environmental matters, and therefore there is no incentive for the initiatives falling under these agreements to integrate the environmental dimension into their program criteria.

Some of the leverage which the federal government had available when initiating ERDA negotiations with provinces is now lost and it will likely be more difficult now to induce some provinces to incorporate more fully environmental quality concerns into the ERDA process. However, these ERDA's and all subsidiary agreements are reviewable on a yearly basis, providing therefore ongoing multi-sectoral possibilities for the intended purpose.

As a first step, all Annexes A on priorities of those ERDA umbrella agreements which do not take environmental quality sufficiently into account, could be modified when revisited. The same process could be applied to all subsidiary agreements to ensure, again, a better integration of environmental quality in ongoing economic decisions, agreed upon by their respective Management Committees.

A second step would be for DOE to enter into a specific agreement with each one of its respective provincial counterparts. Ideally, these agreements could be limited to Memoranda of Understanding which identify measures to be undertaken that do not require a financial obligation from either government but which necessitate a cooperative effort or harmonization with respect to specific policies, programs or activities. Subsidiary agreements, on the other hand, entail financial obligations and, as was suggested by the Task Force review of services and subsidies to business, placing money up-front is not always conducive to the identification of real priorities. The Study Team therefore

proposes that the federal government do its utmost to resist any provincial pressures to sign subsidiary agreements rather than Memoranda of Understanding, at least in the initial phases of this new undertaking.

These agreements, which could be labelled "Environmental Planning Agreements" (EPAs), would contain an annex on jointly identified priorities which could vary province by province. These priorities would guide development and establishment of the various programs, activities and policies for which harmonization is being sought. As suggested earlier, it is through these agreements that negotiations for the levy of emission charges, the establishment of standards and the choice of the regulatory instrument would take place. Pre-existing environmental quality accords between the federal and provincial authorities would also be rolled into these agreements, providing therefore a single window to the coordination of the some 113 signed federal-provincial agreements on Environmental Protection and of most of the 45 federal-provincial agreements on water research and data.

In keeping with its deep conviction that, in the longer term, sectoral departments should be the prime movers of environmental concerns, the Study Team wishes to express a word of caution that these EPA's not be used to supersede environmental activities which would best be left to sectoral agreements. For instance, coordination of research activities on the impact of acid rain on forestry resources should normally be carried out under subsidiary agreements on forest management rather than through these new EPA's.

The Study Team attributes the poor record of the original ERDA's in terms of environmental quality issues to a number of factors. First, the prime objective of economic departments is not the environment. These departments were under severe negotiating time-constraints and were faced with an ever expanding list of competing sectoral demands; environmental concerns, therefore, very seldom emerged in their priority list unless these constituted an immediate threat to their respective constituency such as urgent soil and water issues. Second, decisions on the respective sectoral priorities with each province are made in the Cabinet Committee on Economic Development. Participating departments have a long-established negotiating culture and traditions, and thus the visibility and urgency of their

proposals make them prime candidates for positive decisions. DOE is a much newer department with a short history of socio-economic talents and expertise. Third, DOE is not a member of the Economic Development envelope and, except for exceptional circumstances such as for the recent decision on smelter modernization, it does not have much access to the economic development reserve. Its funding usually comes from the social development reserve in competition with other social initiatives and its argumentation must therefore be socially oriented.

Yet, the core of the Study Team findings is that DOE must look at the integration of environmental concerns into the economic equation and must therefore develop and use the necessary skills and experience for that purpose. At the same time, sectoral departments should be constantly reminded of their environmental responsibilities. A strong case can therefore be made to transfer DOE or at least its environmental quality responsibilities to the economic development envelope.

Conclusions

Observations emerging from the analysis the Study Team has made of the economics of environment are that:

1. It is in Canada's best long-term interests to fully integrate environmental concerns into economic decisions. Hence, the existing government structure whereby environmental responsibilities are incorporated into management decisions on specific sectoral resources is appropriate from a longer term perspective. DOE's environmental quality responsibilities, in the longer term, should therefore be focused on coordination rather than on operations.

2. The economic rent of commonly held properties such as air and water should be more fully recognized and some pricing mechanisms established both directly or indirectly as the economic benefits of pollution control are very high from a long-term perspective. Every effort, therefore, should be made by sectoral departments to promote programs aimed at internalizing environmental costs to their activities and to those of their respective constituencies.

3. A number of promising possibilities to internalize environmental costs should be explored and implemented. Approaches such as emission charges are more cost-effective and less interventionist than subsidies and tax expenditures which could be countervailable in a freer trade environment.

4. A strong and punitive stance, such as practiced in the United States, also internalizes environmental costs but it is not as effective a cost instrument as costs can easily be postponed through court proceedings, inadequate monitoring or weak enforcement practices. Thus, a thorough comparison should be made of the practices followed by the two countries, in preparing for the free trade negotiations, to assess whether they are harmonious both in their design and implementation and to take major discrepancies into account in the ongoing bilateral trade negotiations.

5. As a prerequisite, and even in the absence of emission charges, one of the most pressing priorities for the federal government should be the development and negotiation of base national environmental ambient and emission standards with each provincial government and with the territorial governments after thorough consultations with all stakeholders.

6. The choice of the regulatory instrument to implement the negotiated standards in each province should equally be negotiated on the understanding that provincial instruments when available should be used. The federal instruments are numerous but for water, full participation of the Minister of Fisheries and Oceans will be required as the negotiated standards could well be less stringent than those originally requested by the fishery constituency.

7. The Economic and Regional Development Agreements provide an under-utilized but most useful negotiating framework to implement a better integrated environmental approach to economic development at the national level. Existing ERDA's and sectoral sub-agreements, not sufficiently sensitive to environmental quality concerns, should be amended accordingly at their next annual review and Memoranda of Understanding or Environmental Planning Agreements concluded at the earliest possibility.

8. Serious consideration should be given to moving the Department of Environment or at least its environmental quality functions to the Economic Development Envelope.

OPTIONS

In view of the foregoing, the study team suggests the government consider the following options:

1. A comprehensive proposal be brought forward on various mechanisms which could be implemented at the national level to better recognize the economic rent of commonly held properties such as air and water, on the understanding that:

   a) mechanisms which internalize the cost of environmental benefits, such as regulations flowing from standard setting, emission charges or water pricing are more effective and efficient instruments than subsidies or tax expenditures, which tend to externalize the cost;

   b) economic incentive approaches such as emission taxes or charges are usually more efficient and effective instruments than punitive regulatory approaches;

   c) government revenues accruing from such emission charges, taxes or water pricing should be redirected only to environmental quality initiatives;

   d) a thorough comparative analysis be made of the environmental practices followed by Canada and the United States to assess whether they are harmonious both in their design and implementation and that any major discrepancies be taken into account in the ongoing negotiations on free trade between the two countries; new Canadian environmental measures be so designed as to minimize the possibility of countervailing actions.

2. All existing federal environmental pollution standards be reviewed and new sectors be identified for which standards are necessary, on the understanding that these new ambient and emission standards would be developed with the provinces and stakeholders and would:

a) support the overall objective of the federal government to provide for all Canadians the same base standards of protection from environmental pollution;

b) be monitored, be reviewed periodically and be subject to possible adjustment upwards or downwards in the light of new data, scientific understanding or changing circumstances;

c) be subject to adjustment for greater stringency where differences exist in specific local conditions, including geographic, economic, social and health factors and provincial priorities;

d) not be driven solely by new more sensitive detection methods, without corresponding scientific effort to improve understanding and interpretation;

e) respect cultural differences and needs, including native food supplies, traditions, public health, degree of regional urbanization and population concentration;

f) have regard for the components which go to make up local situations (the industrial and urban mix, geography and ecosystem) and the possible additive or synergistic effects of their effluents and impacts on environmental quality, including such factors as ambient conditions, aquifer sensitivity, endangered species, and differences in capacity to safely absorb effluents;

g) contain implementation schedules, where necessary, to reflect the timing of a series of predetermined, decreasing pollution levels to automatically reach the established end-point base standard;

h) demonstrate a willingness by the federal government to lead by example and to provide targets for others to emulate by increased stringency within the areas of its jurisdiction, where appropriate;

i) be promulgated in the form of regulations;

j) preferably be administered and enforced by the provinces through their own legislation, if possible, or through federal legislation where necessary;

k) be established with the full participation of all other interested ministers, and particularly of the Minister of Fisheries and Oceans whenever fish habitats could be affected by the standards arising from the consultation and negotiations.

3. Economic and Regional Development Agreements (ERDA's) be the chosen federal-provincial instrument to negotiate and implement environmental quality measures requiring federal-provincial negotiations and action, and that:

a) all ERDA's and subsidiary agreements be reviewed to ensure adequate consideration is taken of environmental quality issues and, when desirable, agreements and subsidiary agreements be amended at their next annual review;

b) memoranda of understanding on Environmental Planning Agreements under the ERDA umbrella be negotiated with all provinces to provide for a joint identification of environmental quality objectives and priorities with each province;

c) these memoranda of understanding be used to negotiate the development of joint efforts for the internalization of environmental costs; the development of base standards of environmental quality; the identification of the legislative and regulatory instruments to implement standards; the choice of procedures to implement and enforce such standards; and the approach which should be used to monitor and report on compliance;

d) all previous federal-provincial agreements on environmental quality be incorporated in these Memoranda of Understanding, where they are continued;

e) further harmonization of federal and provincial environmental review processes be achieved through these Memoranda of Understanding or through sub-agreements where available.

4. Serious consideration be given to transferring the Department of the Environment, or at least its environmental quality functions, from the Social Development Envelope to the Economic Development Envelope.

IV. MANAGING ENVIRONMENTAL COMMUNICATIONS

Considerable literature reviewed by the Study Team, including recent reports from the Canadian Environmental Advisory Council, lays strong emphasis on recent opinion surveys, which consistently show overwhelming support for action on environmental concerns and regulations, even at the cost of job losses. At issue is whether these public opinion polls should be used as a solid basis for public policy, supporting an aggressive top-down federal approach to the environment.

The Study Team has very severe reservations for the following reasons. First, despite the consistent results of such polls, governments have found it difficult to take action as strong as they would have preferred, particularly during the difficult economic recession of 1980-81. Second, with such popular support for environmental action, DOE should not have found it necessary to take such a strong "advocacy" approach and some long overdue decisions such as for final PCB elimination and the siting of waste disposal facilities in Ontario would not have met the strong "not in my backyard" syndrome.

Hence, the answer for broader support for environmental quality from provincial authorities, from sectoral departments and from industry must lie more in the degree to which Canadians as individuals will eventually regard the natural environment as an extension of themselves, not only for their own benefit, but also for the benefit of future generations. Only then will citizens willingly accept the inevitable short-term sacrifices from their current standard of living which some of these environmental actions will require. In fact, the Study Team found that the countries, such as Japan and Sweden, which have achieved the greatest progress on environmental issues are those which have greater societal consensus, and in which the community standing of the participants influences success. The latter is enhanced by the fact that all those regulated are involved and thus can expect each other to comply.

To evolve towards this somewhat idealistic situation will obviously require considerable time and effort. However, the sooner the "advocacy" approach is replaced

by a more positive, balanced educational/informational one, conveying a better understanding of the longer-term, underestimated costs which current standards of living impose on the environment, the easier it should be for the federal government and indeed for all governments, through informed and reasoned public debate, well supported by professional publications from DOE, to make their critical judgements in a timely manner. The sooner Canadians, as individuals, demand responsible environmental action of themselves, their employers, and their governments, the easier it will be for governments and industry to take the necessary preventive and remedial action in a socially acceptable fashion. The review carried out by the Study Team on the experience of other countries such as Japan, Sweden and New Zealand (Annex C), lends considerable credit to the thesis that moral obligation, well supported but not entirely dependent on cost/benefit analysis, is a far more efficient and effective instrument in any democratic society to encourage pollution abatement, than one based on a top-down, imposed regulatory approach.

a) A National Environmental Policy as a Consultative Process

Improved societal consensus in Canada and the facilitation of informed public participation in and debate over approaches to environmental quality issues are required. Public participation must be fostered, affected stakeholders should be involved more meaningfully, and the federal government must be positioned in a leadership and cooperative mode, building on the commitments and capabilities of provinces.

The Study Team has profited from a review of analysis and examinations of previous multi-partite and other consultation efforts covering a wide variety of past federal involvement in other major policy issues. These past efforts have been marked with successes and failures due to the relative newness of the consultative process as a tool for public policy development. In fact, one of the commonly used mechanisms today, the task force approach, was only

introduced in North America for this purpose by President John F. Kennedy, and in Canada shortly thereafter. The learning process in broad-based government-stakeholder consultations is still going on and lessons are still being learned from the earlier successes and failures. As noted elsewhere in this Report, the Study Team has been positively impressed by DOE efforts to support the multi-partite process. In this respect, it has found the Policy Tool Kit on Environment, Economy, Employment, which was prepared for the Niagara Institute/Environment Canada Consultation Workshop, to be a concrete example of the willingness of industry and individuals to work together with governments in public policy development. This document provides a number of imaginative public policy ideas.

The consultative process in this area has now reached a sufficient degree of maturity to be tested in resolving environmental issues. The pervasiveness, complexity and intractibility of these issues and their emotional content makes it almost certain that successful resolution can only be achieved through an extensive consultative approach. Another mechanism might be environmental mediation. To the extent that the maturity of these processes is still evolving and that it requires building mutual understanding, respect and trust, it is essential that such efforts be initiated and conducted with careful planning and sensitive consideration, requiring significant skills. Such broad-based approaches have already produced successful results in the environmental area, including the current multi-partite approaches under DOE to update the Environmental Contaminants Act; under NHW to develop proposals for safe drinking water legislation; the successful development of regulatory proposals under CCA and Labour Canada for a Workplace Hazardous Materials Information System under the Hazardous Products Act and provincial Acts; and the series of multi-partite conferences on environment sponsored by DOE under the auspices of the Niagara Institute.

The federal government should build on these positive experiences and should also profit from other past, less successful efforts, such as the voiced provincial concerns over the perceived unilateral establishment of the Inquiry on Federal Water Policy. The development and elaboration of the long overdue, comprehensive National Environmental

Policy, would provide a unique opportunity to set the wheels in motion in the right direction, that is within the new spirit of full consultation with stakeholders and consensus-seeking.

Although the Study Team, in its considerations, has explored the federal scene in some detail, more work is clearly required to better understand other involved parties, such as provinces, ENGOs, industry, academia and individuals. They, in turn, must be given an opportunity to be heard on those shorter term trade-offs they might be prepared to accept for the benefit of future generations. The process to develop the National Environmental Policy could be seen in this context. A "National" policy is one that is developed by all the stakeholders to reflect their common principles. It should not be mistaken for one proclaimed by the federal government in support of its national responsibilities. (The usage of the word "national" elsewhere in this report has this same meaning.)

The National Environmental Policy should address such basic matters as the philosophy of environmental quality; express the will, intent and commitments of the parties and society generally; set forth significant broad-based goals and identify the broad efforts of all parties to achieve them in a cooperative framework; and, perhaps, treat the matter of basic environmental rights. An equal need in and tangible benefit to be derived from the effort to develop a national policy will be to create a climate which will be conducive to parallel and later consultative efforts on a wide range of specific subjects. This effort must therefore underscore the basic principle that such consultation is to be a process, and not an event.

In order to foster this process and its climate, the consultative vehicle used to develop the national policy is of paramount importance and the selection of the approach should itself be the subject of wide-ranging consultations which should begin immediately. The strengths and weaknesses of the various possible approaches, ranging from a Royal Commission, a Parliamentary Committee and through to Green Papers should be carefully considered and publicly discussed before selecting the most appropriate vehicle or combinations of vehicles for this task. To predetermine this process at this time would be to preempt the basic

thrust of the consultative approach. One may have a view, but it should not be imposed on others if genuine participation by all the parties is to be achieved.

A Royal Commission could have the advantages of high visibility, credibility, a wide-ranging mandate, representation of stakeholders, staff expertise and easy acceptance of recommendations, if well formulated. The limiting factors of "yet another" Commission include the fact that the stakeholders are not interacting with each other; that it is a forum for presentation of positions but not necessarily for consensus-building; that its perceived formality as well as public nature might limit participation; that it might be too lengthy a process; and that it does not constitute a full process of political consultations.

At the other end, a federal Green Paper has the advantage of stimulating debate without any fixed positions; it would initiate awareness and, to a lesser degree, responses. But, without a structure for focusing the debate and responses to it, and mindful that it would be perceived and would in fact only be a federal vehicle, its utility could be questioned given the nature of the issue. For this reason, the Study Team suggests that the final process chosen for elaborating the national environmental policy must utilize a combination of vehicles to achieve the required degree of participation and consensus.

b) Financing and Harmonizing Participation

As pointed out by the Macdonald Commission, effective participation by citizen interest groups (ENGO's) over a broad range of issues in various forums raises the financial equity question inevitably, which must be addressed and resolved to ensure their ongoing and effective participation. This participation in the consultative process can range from intervenor status and funding at EARP hearings to participation in specific multi-partite task groups. The funding policy to facilitate participation must be closely examined from two perspectives. The first is the nature of the funding such as whether it should be of a project or core type. The second is from which body in the federal government such funding should emanate.

It is the Study Team's view that, in order to both ensure and have the appearance of ensuring equity and impartiality, a comprehensive federal policy for funding ENGO's must urgently be developed. ENGO's should find their legitimacy in the quality of services they render to their respective constituencies. That they should rely on membership fees to support their core activities can only make sense. On the other hand, ENGO's should not spend most of their energy on fund raising campaigns if they are to become strategic rather than issue oriented. The Study Team was struck with how little assistance ENGO's received from the federal government as compared to other sectoral lobby groups such as for culture. Yet, in a new policy area such as environmental quality, their fuller participation in a new consensus mode could be quite constructive. The Study Team therefore suggests that such ENGO funding be provided on a project basis for such participatory/consultative activities and should come directly from involved departments, in the absence of any federal agency today having an appropriate legal mandate to provide such funds.

The Department of Environment and other involved sectoral departments should jointly develop such a policy, establish funding levels and administer their respective programs to achieve this fuller participation by ENGO's. In designing such a policy, care must be taken to ensure that the selection criteria for project grants will not limit the flexibility ENGO's will require to express themselves freely. The Treasury Board should be requested to pay particular attention in its review processes to the efficacy of such funding.

The study team has looked also into the Federal Environmental Assessment Review Process and finds the process consistent with its approach to leave sectoral ministers responsible for environmental concerns. The initial Study Team had made some relevant proposals which, if implemented, would bring about the required improvements. The Study Team was nevertheless impressed with several views it heard from companies at the leading edge of environmentally sensitive projects, who view these open review panels as a sign of failure for the developers not having sufficiently taken into account the views of the various stakeholders at the project design stage.

Finally, the Study Team subscribes to the views expressed by several deputy ministers that the federal Environmental Assessment Review Process must be harmonized and integrated, where possible, with other federal and provincial processes to further encourage and facilitate public participation, and which would, at the same time, reduce the impacts of multiple hearings on affected stakeholders and lessen federal-provincial tensions. The suggested federal-provincial Environmental Planning Agreements and other sectoral subsidiary agreements would provide a most useful vehicle for this purpose. In addition, there is a valid role for DOE to supply, on behalf of all parties, balanced presentations of data on relevant issues.

Conclusions

Experience demonstrates that there is insufficient consensus on environmental quality issues in Canada for the federal government to take an aggressive top-down regulatory approach and to make difficult environmental decisions involving significant economic trade-offs. A new communication/educational approach, building mutual trust and needing careful planning, sensitivity and significant skills, based on the following activities is urgently required:

1. Canadians must come to an understanding that environmental quality will be a benefit to themselves and future generations in order to accept the short-term sacrifices in their present standards of living which may be required.

2. The development of the long overdue national environmental policy would provide a useful vehicle to stimulate an open national debate as long as all stakeholders are consulted, even on the consultative processes which should be used for that purpose.

3. Environmental non-governmental organizations are ill-structured and lack strategic orientation primarly due to insufficient funding; a federal policy, primarily based on project funding for ENGO's, is required.

4. Federal and provincial environmental review processes should be harmonized through the Economic and Regional Development Agreements umbrella and every attempt should be made to take into consideration stakeholders' views at the project design stage rather than at an ex post facto public hearing.

OPTIONS

In view of the foregoing, the study team suggests the government consider the following options:

1. A long-term and ongoing communications and consultation strategy be developed to provide for a balanced informational and educational, government-wide program to foster understanding of the underestimated costs which current standards of living impose on the environment; of the limitations and divergent scientific interpretations in this new area; and of the requirement that every Canadian has the right and a civic duty to participate more fully in environmental quality discussions and in the decision-making process; this strategy should, inter alia:

   a) support, through various processes to be determined on the basis of consultations, the development of a National Environmental Policy;

   b) make use of a yet to be developed new comprehensive federal policy for the funding, by all affected departments, of the participation of environmental non-governmental organizations in specific events and projects.

V. MANAGING ENVIRONMENTAL SCIENCE

One of the strongest conclusions emerging from the Study Team's historical analysis is that top priority ought to be placed on narrowing the gap between the growing capacity of science to monitor the presence of pollutants and its lesser ability to interpret this data, and the further gap in the ability of governments and industry to take corrective and preventive actions. Environmental science is still developing. As a result, the striking differences in interpretation among scientists on the nature and magnitude of problems make it exceedingly difficult for governments to take soundly-based, efficient and effective action.

This problem has become even more critical with improved scientific capabilities having established a clear link between environmental pollution and public health. This may well mark the shift that has occurred in public attitudes, from an earlier concern with damage to the environment to the current focus on public health dangers.

Vocal public demands for urgent action by governments ought to be expected, particularly in crisis situations. Increasingly, governments will be required to react without all of the necessary scientific evidence. Yet, hasty decisions in such a climate can be expensive. It also creates lessened credibility for governments with industry, for example, when they are asked to undertake new, expensive actions which might be proposed without a full understanding. For instance, the now discredited implementation of pollution dilution measures, which may have served to dampen certain confrontation situations in the past, has ultimately resulted in the spread of contaminants over a very wide area with incumbent magnified costs for clean-up. Similarly, the decision to subsidize removal of urea formaldehyde foam insulation from Canadian homes in the face of expressed public concern over its effects proved to be both controversial and costly. These and numerous other examples provide clear evidence of the need for governments to master new risk assessment and management techniques. The Study Team has already subscribed to the need for wider public participation in decision-making. This will only be productive if it is also linked to a new approach to the management of environmental

science - one that will foster a better understanding and, when possible, convergence of differing scientific interpretation.

The Study Team has identified four prerequisites for that to occur:

1) the available data base must be consolidated, ensuring it is authoritative, unassailable and open to all stakeholders as a basis for development of their own scientific interpretations and policy conclusions;

2) improved coordination within and outside the federal government and improved focus on research and development priorities to narrow science gaps is required;

3) public understanding of scientific data and participation in risk assessment and management must be fostered, leading to a more open system; and

4) monitoring and meaningful display of environmental improvements and deterioration must be enhanced to hold the various stakeholders more accountable.

a) Consolidation of the Data Base

Informed and reasoned public debate, even where there is conflicting scientific interpretation, is only possible if all participants have access to the same non-proprietary information which the regulatory body has available to make its decisions. In the economic area, citizens might hold different opinions, but they all share the common data published by Statistics Canada. In the environmental area, there is no comparable data base; this weakness has been recognized by the Canadian Council of Resource and Environment Ministers (CCREM), which has already endorsed the need for an improved, comprehensive and national chemicals data base, which would be available to all. The capability for storing and retrieving environmental data and information is well-advanced across Canada. It lacks, however, the national consolidation and authoritative assessment, including indications of its reliability, strengths, weaknesses, limitations and implications, which are critical for stakeholders who need to know.

In order that the data base be accepted as comprehensive, sound and authoritative, the stakeholders will require assurance that the body of knowledge pertinent to the environmental issues of interest to them is collected from the numerous federal and provincial departments, universities, private companies and ENGO's where it may reside, and that the collection is improved, enlarged, and kept up-to-date on an ongoing basis. A good monitoring system, required for any system of emission charges as proposed, would not only need, but would also produce a range of authoritative data for a data base.

Such a data base was suggested by several deputy ministers, and recommended by Pearse and Macdonald. Its importance and credibility cannot be under-estimated. It is a fundamental cornerstone and will provide the necessary data for a variety of initiatives set out in this report:

- effective decision-making;
- standard setting;
- state of the environment reports;
- informed public participation;
- coordination and harmonization of scientific information and its transference in a multi-disciplinary mode (for example, the quality of a water body can be vitally important to health studies and also fisheries management);
- establishment of effluent charges;
- arm's-length monitoring of compliance with laws and regulations, nationally.

The categories of data bases most pertinent to environmental management include: (a) scientific/technical publications from world literature; (b) raw data (unpublished experimental or monitoring data stored for future use, the existence of which is usually known only by those immediately involved); (c) management information (goals, planning and monitoring information dealing with administrative and operational areas); (d) the "grey" literature (departmental reports, contractors' reports,

memoranda and some conference abstracts; this material is rarely entered into an electronic system and its availability is lost to both management and researchers); (e) legislative and judicial information including a listing and explanation of all federal, provincial and territorial environmental statutes, regulations, ordinances and other statutory instruments; within the national context, powers of the various ministers; the record of enforcement actions from across the country, e.g. civil suits and criminal prosecutions. With respect to all of the categories of data mentioned above, confidential business information, under certain provisions and safeguards, could be integrated into this consolidated data base.

The literature constituting these data bases is very extensive and is growing rapidly. While there are many storage and retrieval systems for scientific literature and data, less attention is paid to systems for integrated management.

The gradual convergence of scientific interpretation is the most important initial ingredient to be introduced into the risk-cost-benefit analysis, leading ultimately to balanced social and political decisions. As the Deputy Ministers suggested, this consolidation of data is long overdue and must be considered as a sine qua non condition to consensus building.

b) Research and Development

The second prerequisite for narrowing the scientific gaps reflects the strong urgings of the Macdonald Commission and the Pearse Inquiry for governments to place increased emphasis on environmental scientific activities and to accelerate, priorize and better coordinate national research and development activities. Fundamental to achieving this result is a complete review of current relevant federal programs, expenditures and priorities, in the context of efforts in other governments, industries, universities and ENGO's, in order to improve efficiency and effectiveness, particularly through rigorous assessment of relevance and better targeting.

But rationalization does not necessarily imply concentration. In keeping with the rationale for integrating environmental quality concerns into program

responsibilities of sectoral departments, the federal government's environmental scientific effort must be reflected in the ongoing scientific responsibilities of sectoral departments. There would be little merit in withdrawing environmental scientific activities from sectoral departments and placing them in DOE.

While this may be seen as enshrining fragmentation within the federal government in an area where stronger coordination is being urged, it is important to realize that overlaps in this new and multi-disciplinary area, where so much is yet to be learned, should not be a major concern. The Study Team's assumption is that concrete results will come from a host of science programs, not just in the federal government, but equally from diverse industries and companies, universities and faculties, provincial departments and other research institutes.

Such fragmentation makes the need for environmental science coordination at the national level even more essential. By virtue of its involvement in inland water research and through its Lands Directorate, DOE already has the most important concentration of environmental scientific activities in the federal government and, indeed, in the country. Some could argue that DOE's involvement in inland water research is somewhat of an anomaly and that such scientific activities would best be integrated into the water and ocean scientific activities of the Department of Fisheries and Oceans. On the soils side, the MTF review of Major Surveys has already suggested that such responsibilities be transferred to Agriculture Canada's Land Resource Research Institute Directorate.

From a conceptual and longer term standpoint, this Study Team shares this school of thought. From a short term practical standpoint, however, these possible moves might be somewhat premature for a number of reasons. First, environmental science is still in its infancy and it is alarming how little support it now provides to ministers in the decision-making process. Second, sectoral economic ministers have different constituencies than the Minister of Environment and, therefore, different short and medium-term priorities which translate themselves into their respective sectoral research priorities. Third, the federal government does not yet have the coordination mechanisms which it

requires to effectively and efficiently manage its overall scientific activities as part of the national scientific effort.

It would thus seem prudent to retain in DOE over the next few years the scientific responsibilities which it now has for environmental science, until at least such time that a satisfactory and proven coordination mechanism is put in place to ensure that sufficient environmental science is devoted to the right environmental priorities; that sectoral departments pay adequate attention to environmental implications in their on-going research activities to ensure their expenditures serve the objectives for which they had been voted; that maximum use is being made of externally generated scientific activities; and, finally, that such scientific activities are results-oriented.

MOSST is actively pursuing the development of possible instruments for this purpose but a general agreement on such a horizontal and comprehensive approach for the whole spectrum of governmental activities is still many years away. Meanwhile, ministers need urgent improvements to the coordination and targetting of environmental science and some interim arrangements are necessary.

One possibility might reside in the Department of the Environment, as a compulsory feature of the MYOP exercise, establishing well-supported federal environmental scientific priorities on a single sector basis. These priorities could then be reviewed by the revived Committee of science ADM's, chaired by MOSST whose Minister, after consultation with the Minister of Environment, would transmit his recommendations to the Treasury Board in the context of its consideration and approval of Multi-Year Operational Plans (MYOPs) of the various departments.

This approach offers several advantages. First, it would provide a forum to ensure that environmental scientific priorities are challenged and, therefore, well-supported before being undertaken. Second, it would provide MOSST with an instrument to assure itself that environmental science is subject to broader scientific objectives of the government, such as externalization or contracting-out, and that the relative importance of environmental science versus that of other scientific activities is established. Third, through the Treasury Board, allocation to or reallocation of

resources within sectoral departments for important environmental scientific priorities would be effected and their results monitored annually.

DOE should therefore be required to maintain an active role of leadership and liaison with all the stakeholders to achieve success in this role, and the Treasury Board MYOP exercise, with the involvement of MOSST, could prove to become an important vehicle to support environmental scientific objectives, to the extent that the government as a whole declares itself in support of the repeated and urgent pleas which the Study Team has heard on this issue.

c) Fostering Public Understanding and Participation in Scientific Interpretation

To narrow the gaps in scientific interpretation will also require bringing considerations of environmental issues out of the sole purview of scientists in order to increase public knowledge of the contributions of scientific research and findings, and the limitations thereof. A prerequisite to success, therefore, will be placing the scientific evidence on the table. DOE is to be commended for having undertaken and sponsored many creative approaches over the last few years to build stakeholder consensus, such as the multi-partite consultative process of the Niagara Institute and other forums. These processes must be accelerated and expanded to achieve this goal, and all departments having an interest, such as Health and Welfare Canada, must play their part. Governments alone can no longer be expected to arbitrate between conflicting scientific interpretations on specific issues, involving trade-offs between possible but undetermined health effects and standards of living. It is becoming imperative that citizens, individually and collectively, be given an opportunity to hear the evidence, participate in necessary debates and feel, in the end, that they have had a real influence on the decision-making process in such a value-laden area.

An important component of this better public understanding of environmental science data will be the improvements in the abilities of various publics to better predict and foresee the emergence of future environmental threats and emerging issues. The Study Team, in its consultations with people in the field, was struck by the

notable absence of significant strategic understanding of future issues, such as biotechnology, and it attributes this to the lack of participation in discussions of science, which is key to the establishment of both a broader and longer-range outlook.

d) New Accountability Regimens

A fourth prerequisite for narrowing the scientific gaps would be the development of an environmental accountability regimen applying equally to all stakeholders. The Study Team is of the view that periodic State of the Environment Reports will provide a key element in this accountability regimen and, as well, will become a public expression of the data; the basis for ongoing, informed public participation and consensus-seeking; an aid in setting priorities and developing appropriate policy responses and action plans; and a basis for decision-making on research and development priorities through to policy.

i) Design of State of the Environment Reports

These reports should monitor and translate the comprehensive, validated ecosystem indicators into trends of improvement and deterioration in the various regions, ecobodies, economic and national resource sectors. These ecosystem indicators are the key element to translate the efforts of science into a management approach, which can then be used to guide scientific research. These reports also would make recommendations on priorities and research activities and highlight increasing or decreasing convergence of scientific interpretation or note previous interpretations that have proved valid, invalid or suspect. The reports would also contain data on new legislative initiatives and prosecutions. State of the Environment reports would also monitor the environmental information scene internationally; advise where post-audits of previous actions and assessments might be needed to verify assumptions so that successes or failures can be translated into future actions; direct or commission independent studies of monitoring methods and systems to determine scientific pertinence, efficiency and effectiveness; determine gaps and overlaps in the data base and identify redundancies. Bolstered by the recommended data base, and assured that the State of the Environment reports would be

national in outlook, encompassing the interests of all the stakeholders, the reports would provide the background for the environmental agendas for several years in the future.

The concept of state of the environment reports is not new, though one has not yet been issued in Canada. Among the twenty-four member countries of OECD, some sixteen of them have produced State of the Environment reports or compendiums of environmental statistics. These reports vary considerably in approach, subject matter and quality of the supporting data. One of the most interesting OECD initiatives in the field of environment has been its publication in 1979 of its first State of the Environment Report, and a second one in 1985. Their purpose is to assess the state of the environment in all member countries, to aid them in responding to public demands for environmental information, to assist them to define, implement and evaluate environmental policies and, finally, to incorporate environmental concerns into decision making. The OECD considers the reporting on the state of the environment to be critical in the formulation of global environmental management policies for sustained use of the environment and its resources.

The OECD State of the Environment reports demonstrate the progress made in dealing with many of the urgent environmental problems during the last fifteen years. They also identify persistently difficult situations, assess water, soil and air quality, highlight the concerns for and presence of hazardous substances, assess the pace of progress and identify emerging issues in terms of new pollution concerns, natural resources concerns and environmental risks.

In the United States, the Council of Environmental Quality, a wing of the Executive Office of the President, has as one of its principal responsibilities the publication of an annual Environmental Quality Report for the President, which is then transmitted to Congress. This is a detailed and exhaustive review, bolstered by considerable scientific evidence, on the state of environmental quality. First published in 1970, these reports assess the status and conditions of the major environmental resources of the nation; examine various trends, including selected air pollution problems and critical pollutants; evaluate the environmental quality of the nation's lands and waters;

assess the federal government's environmental programs and activities, as well as economics and demographics; address international environmental issues; describe the findings of environmental research, environmental health research, ecosystem research, environmental process research and environmental technology research; and review the regulations and litigations under the National Environmental Protection Act.

Canada is in the process of producing a prototype State of the Environment report, sponsored by DOE and Statistics Canada. This is in response to a 1979 OECD Ministerial level Environment Committee request for all member countries to undertake such reports. In order to prepare for this report, an extensive series of consultations jointly sponsored by Environment Canada and Statistics Canada was undertaken in 1981 involving government officials, outside experts and a broad cross-section of the public. There was widespread support for a concise and objective report taking a more global approach rather than focusing on specific local issues. A proposal to produce the first State of the Environment report was endorsed by both Environment Canada and Statistics Canada in March 1982 and subsequently approved by the respective Ministers. It is currently expected that this prototype report will be published in April 1986.

DOE kindly made available to the Study Team an advance draft of this upcoming report for its review. The Study Team fully concurs with DOE's initiative in preparing and publishing this prototype report. The Study Team also notes that the Pearse Inquiry and the initial Study Team proposed that a comprehensive report on the state of the natural environment in Canada be prepared every five years.

The Study Team's examination of State of the Environment reports reveals that all are in a state of evolving sophistication, utilize indicators of varying quality and efficacy, have different breadths of coverage and suffer from the inadequacies of the data bases necessary to prepare them. Nevertheless, these reports represent an evolving opportunity for more soundly-based decision-making and forecasting, and will improve in their quality as the shortcomings of existing approaches are overcome. The Study Team feels that the preparation of a State of the Environment Report is a very necessary and vital element in

its overall proposals for improving environmental management in Canada. Inherently, because of the Canadian context, these reports must be national, and not federal, in their preparation and outlook.

The State of the Environment report will be the mechanism for the enhanced accountability regimen that is necessary for effective environmental and resource management. An additional accountability tool would be a requirement that all federal activities having direct or indirect impacts on environmental quality be identified, their related resources quantified and progress monitored and reported upon annually by all affected departments, including through their respective annual reports.

ii) Management of the State of the Environment Reports

To manage the development of the data base will require an increasingly sophisticated understanding of the parameters affecting the ecosystem. Success in achieving the objectives for monitoring, reporting and managing the data base should lead to an increasing regard for the authoritative capabilities and professional quality of the responsible agency.

Due to the importance of this data base and the absolute need for its credibility, both in terms of the uses already described and as the basis of the preparation of the SOE report, the Study Team proposes that, as a fundamental requirement, the data base be managed and the State of the Environment reports be issued by the same body.

The Study Team sees considerable advantages, for both the federal government and the Minister of Environment, if the responsible body were to be seen as independent of the influence of any federal minister. Many other countries have independent councils, with widely differing roles, to meet the needs of their systems of government and cultures. As an independent national instrument, it would be a most useful device to the Minister of the Environment to set the agenda for policy and priority issues, regulatory matters and negotiations with provinces and industry, based on external advice. It would allow the Minister of the Environment to speak with enhanced authority to stakeholders and even within the Cabinet. Today in Cabinet he, alone, bears the environmental preservation pressures, but in

future these would be shared by other ministers. Finally, the State of the Environment reports would give the Minister added leverage in federal/provincial negotiations. In short, this body, through its annual reports and its responsibility to manage the data base, would function effectively as an unbiased national reporter on the environment and on the direction that should guide national efforts to improve environmental quality by governments, industry, universities and ENGO's.

This body must be national in scope, independent in action, respected in status and apolitical, in order to collect and manage data from all sources and issue State of the Environment reports on the entire country to serve as a national accountability regimen for all the stakeholders; clearly it should not be under the direct control of any federal minister. For the same reasons, in the study team's view, it would be entirely inappropriate for the body to report directly to any council or committee of ministers, federal or provincial. The very nature of this body requires that it be independent of the Minister of the Environment, of DOE itself and of provincial environment or resource ministers, irrespective of historical precedents and despite funding considerations.

Therefore the Study Team proposes, as the only viable alternative due to the nature of the functions described, that a new independent body be established to be responsible for the management of the data base and for preparing State of the Environment reports, and that it be styled the National Council on the Environment. It was a matter of interest to the Study Team that the Pearse Report had noted a growing anxiety over natural resource exploitation and about disruptions and degradation of the environment, combined with feelings that governments were remote and unresponsive; in its view, the the public finds it difficult today to have meaningful input and interest groups vary in their capabilities; Pearse added that the current Council is only advisory to the Minister and has a very low public profile, since it is constrained from speaking out; it therefore suggested that the Council be given professional staff.

In the end, the Pearse Report recommended that: "The Canadian Environmental Advisory Council should be replaced by a new, independent council devoted to investigating issues of environmental policy. This new council should:

i) consist of members who have high stature and wide knowledge of environmental matters;

ii) prepare a comprehensive report on the state of the natural environment in Canada every five years;

iii) investigate and report, with recommendations, on such environmental problems in Canada as it considers appropriate or as may be referred to it, as well as an annual report on its activities;

iv) report to the Parliament of Canada."

The key differences between the Study Team's approach and that of Pearse are that the Study Team is proposing a national and not a federal body and is making no proposal regarding the Canadian Environmental Advisory Council. The new Council would not have any role in generating new scientific research data, nor would it have any role in developing or implementing policy, regulations, standards or enforcement. The very nature of the proposed National Council on the Environment would require, as Pearse recommends, that appointees to the Council be persons of stature with relevant experience. The Study Team would foresee federal appointments by the Governor in Council and provincial ones directly by the relevant Lieutenant-Governor in Council, with perhaps some of the appointments made by the GIC being used to ensure representation of stakeholders, including such as interest groups, industry, labour and academia. These appointments would be of a part-time, per diem nature for a fixed term.

The new Council would be created by a new federal piece of legislation which would have high visibility and would serve to underscore the new commitments of Canada's governments to environmental quality. The Study Team has already stated its reasons why this Council should not report to a federal minister or a council of ministers. Pearse recommended that it report to Parliament and the Study Team concurs, with the further suggestion that preferably, it would report through the President of the Queen's Privy Council for Canada. The Study Team would add that the Council's reports be tabled simultaneously in Parliament and the Provincial Legislatures.

The establishment of the proposed Council can only come about through a joint federal-provincial consultation process leading to full agreement on all the issues and the legislation. That consultation must begin soon; the nature of the federal government's approach and its initial first steps must be very carefully considered and be harmonized with other initiatives proposed by the Study Team. Included in these discussions will be the matter of funding. The federal government will be able to contribute some resources that will inevitably be withdrawn from other federal departments and the provinces would likely bear the costs of their appointees and should be expected to make contributions of data and expertise. The federal government and the provinces should be able to find the necessary funding through the efficiencies of the improved data management and data sharing, and also the rationalization and focusing of environmental science activities. Some funding mechanism will have to be developed to limit disagreements between the parties on the Council's budget, given its unique role and independent function.

The Study Team has reviewed analyses of other similar bodies such as the Science Council of Canada and the Economic Council of Canada and underlines the importance of the following suggestions to ensure the effectiveness of the proposed Council. The role and orientation of the Council must be clearly conceived and described in its legislation; its arm's-length relationship must be confirmed and no power of direction should exist. Appointments must be carefully weighed to ensure its independence, high reputation, proper representation and unassailable character. The problems which have occasionally beset similar bodies can be avoided if this receives careful thought. A problem which might otherwise surface is the possibility of such a body misperceiving its defined role as a factual reporter and custodian of the data base. By confining itself to reporting the data, defining the nature of issues, and providing a framework for decision-makers, it will have succeeded.

Conclusions

Decisions made under pressure in the environmental quality area without sufficient scientific support can lead to expensive mistakes and lessen future credibility. Better risk assessment and management techniques are required. A

new approach for the management of environmental science is, therefore, required to guide ministers' political decisions on the environment; the available data base must be consolidated, ensuring it is authoritative, unassailable and open to all stakeholders as a basis for development of their own scientific interpretations and policy conclusions; improved coordination within and outside the federal government and improved focus on research and development priorities to narrow science gaps is required; public understanding of scientific data and participation in risk assessment and management must be fostered, leading to a more open system; and monitoring of environmental improvements and deterioration must be enhanced to hold the various stakeholders more accountable.

In the view of the study team, the following priorities should guide the suggested new policy thrust of the federal government on environmental quality:

1. Top priority should be assigned to narrowing the gap between the growing capacity of science to monitor the presence of pollutants and its lesser ability to meaningfully interpret this data and the even lesser ability for governments and industry to take preventive and corrective action; this is even more essential now that a clear link is established between environmental quality and health considerations.

2. DOE has the most important pool of environmental scientists; in the longer run, these operational responsibilities would best be integrated in sectoral departments in keeping with the policy thrust of integrating environment and economics; in the short term, however, such a major interdepartmental reorganization would be ill-advised.

3. Innovative approaches are required to take environmental science out of the sole purview of scientists, to help citizens to understand its limitations and to ensure that federal scientific activities in this area foster a strengthened, nation-wide effort; an internal federal mechanism is required to priorize environmental scientific activities, to ensure they are performed by the sectoral departments, to monitor results annually and to bolster environmental science performed nationally.

4. Environmental science should ultimately be fully integrated into sectoral science; meanwhile, a mechanism is required within the federal government to better priorize environmental science, to ensure sectoral departments pay adequate attention to those priorities, to better coordinate internal and external environmental science and to ensure it is results-oriented.

5. As is available today in the economic area through Statisitics Canada, a comprehensive, authoritative, unassailable environmental data base, open to all, should be developed; it should be national rather than federal, as it should serve as the common basis for all stakeholders who would be participating in local, regional, provincial or federal-provincial discussions and negotiating processes. These data would have to be provided by all interested parties, including provincial governments, universities, and the private sector; proprietary information could also be provided under certain terms and conditions.

6. State of the Environment Reports should monitor and translate comprehensive ecosystem indicators into trends of environmental improvement and deterioration; be used as a national accountability regimen for all levels of governments and industrial sectors; be published, therefore, by an independent body involving full participation of all provinces, industry, labour and academia, all of which would be important suppliers and users of the necessary information. This independent body should therefore also be responsible for the aforementioned data base.

OPTIONS

In view of the foregoing, the study team suggests the government consider the following options:

1. The following principles be approved to narrow the gap between the growing capacity of science to monitor the presence of pollutants and its lesser ability to interpret these data, and the further gap in the ability of governments and industry to take corrective and preventive action:

   a) recognition that the early development of an authoritative, unassailable and comprehensive national, as opposed to federal, data base is

required to ensure that all stakeholders have access to all available information to develop their own scientific interpretations and policy conclusions;

b) coordination within and outside the federal government and focus on research and development priorities be improved;

c) public understanding of scientific data and participation in more sophisticated risk assessment and management be enhanced;

d) monitoring of environmental quality improvements and deterioration to provide for a national accountability regimen be upgraded.

2. For the purposes of implementing the principles outlined in paragraph 1 (a) and (d) above, the creation of a new, arm's-length, national body, to be known as the National Council on the Environment be approved in principle, subject to further national consultations and a subsequent report to Cabinet, on the understanding that the new Council would:

a) act as the custodian and manager of the National data base, the comprehensiveness of which would require full participation of all levels of governments, the private sector, universities and non-governmental organizations in providing it with the total environmental information they possess, including proprietary information under certain terms and conditions;

b) develop and publish regular State of the Environment Reports which would, inter alia, monitor and translate the comprehensive national data base into trends of improvement and deterioration in the various regions, ecobodies, economic and national resource sectors; these reports to introduce a new national accountability regimen to assist in the identification and follow up of environmental quality priorities across Canada by all levels of government, industrial sectors and other stakeholders and to enhance the quality of their respective monitoring activities that are required under a decentralized federal regime favouring an incentive to a punitive approach;

c) the Council to report to Parliament, through, but at arm's-length from the responsible minister, and its non-advocacy role and orientation be clearly conceived and thoroughly described in its legislation;

d) appointments to the Council to be shared by the federal and provincial governments, to be at tenure, and to be fully representative of all currents of environmental opinion, with adequate private sector, labour, academic and non-governmental representation.

3. For the purpose of implementing the principles outlined in paragraph 1 (b) and (c) above:

a) a pilot project be implemented whereby the Treasury Board, in the context of the next annual Multi-Year Operational Planning exercise, would ensure that all interested departments provide sufficient resources for environmental scientific activities based on recommendations from the Minister of State for Science and Technology, after interdepartmental review of the environmental scientific priorities identified by the Minister of Environment;

b) a report be prepared on ways in which risk assessment and management techniques could be more widely introduced and integrated into the environmental decision-making processes with due consideration given to enhanced public participation and understanding of the results and limitations of science.

VI. MANAGING LEGISLATION

The Study Team's analysis of the economic, communications and scientific framework for environmental quality demonstrates that a strong federal, punitive regulatory stance is not very practical, nor is it a most cost-effective approach. A system based on economic incentives, where the regulatory framework emerges from consensus-building rather than being imposed upon the stakeholders, is more conducive to effective federal-provincial collaboration, which is key to fostering early and tangible action.

The whole thrust of the new approach to environmental quality is fully consistent with the guiding principles of the recently announced regulatory reform strategy. For instance, the economic incentive, less-interventionist approach, inducing firms to exceed a base standard, focuses on the results to be achieved rather than on the means of achieving them and attempts to rely on market forces. The development of standards, which are regionally sensitive and developed jointly with the provincial governments, is consistent with the objectives that businesses of different sizes not be burdened disproportionately by the imposition of uniform regulatory requirements. The flexibility to choose the most effective and efficient regulatory instrument should gradually induce provinces to take the necessary steps for pollution abatement within the spirit of the regulatory stance. The plea for fuller involvement of all stakeholders at the front-end of standard-making is consistent with all references made to public participation clauses within the regulatory guiding principles. The proposed national accountability regimen supports the need for effective and reliable monitoring of compliance, and also the participation by those regulated and other affected interests in, themselves, monitoring compliance with the requirements.

It should be possible to carry out all of the above noted initiatives, with the exception of the creation of the new National Council on the Environment, under existing legislation. If technical amendments were required, however, these should be primarily aimed at providing ministers with the added administrative leverage they might require to favour an incentive-based approach rather than relying primarily on punitive measures.

The Study Team's review of relevant literature and its consultations with a variety of federal officials responsible for the administration of diverse elements of the body of environmental legislation has nevertheless uncovered a profound malaise regarding the effectiveness of the federal legal instruments available. The Study Team therefore found it necessary to examine the existing federal environmental legislation to identify some of the broad fundamental weaknesses. This area has proven to be one of the most complex issues faced by the Team. The time available did not allow for formulation of precise suggestions on specific corrective actions which will be needed. The Study Team has attempted, however, to point out the general direction in which further studies ought to be undertaken.

a) The Current Constitutional Situation

When the Fathers of Confederation drafted the Constitution Act of 1867, they did not allocate legislative authority on environmental matters to either the federal Parliament or to the Legislatures of the provinces. Without clear responsibility for, or guidance in, the matter of environmental concerns, both levels of government have, over the years, been able to claim authority for managing environmental problems by taking the position that various aspects of the subject matter fall within their respective areas of competence.

It is generally accepted that the federal argument in favour of its role in environmental protection relies primarily on the "Peace, Order and Good Government" clause of s. 91 of the 1867 Constitution Act. Other sources of power, which have been cited to claim the validity of federal environmental legislation, include the regulation of trade (91(2)), taxation (91(3)), navigation and shipping (91(10)), fisheries (91(12)), the criminal law (91(27)) and the regulation of works or undertakings that are interprovincial or international in nature (92(10)(a)) or ones that are declared to be for the general advantage of Canada (92(10)(c)). These powers have generally been used in relation to the national interest, international imperatives, health, well being and prosperity of the people of Canada.

On the provincial level, by contrast to the foregoing enumeration, the s. 92(13) clause on Property and Civil Rights has taken on such singular importance that it is now considered to be the broadest constitutional umbrella under which provincial environmental legislation is enacted.

Jurisprudence relating to the constitutionality of federally enacted environmental law is scarce and inconclusive. This rarity of case law is the result of several factors. One of the more prominent of these causes is the small number of court actions undertaken to enforce federal environmental statutes. Among the many underlying factors which were mentioned in the Study Team's historical analysis is the uncertainty of federal legal advisors as to the constitutional validity of some of the legislation they administer.

This situation leads many to believe that the first priority in the area would be to define more precisely the respective constitutional roles of the federal and provincial governments in relation to resources held in common: air and water. As commendable as the above objective might be, its realization would not be practical.

The Study Team is of the opinion that any attempt to better define the limits of constitutional authority in this field would entail interjurisdictional controversy, with its inherent strains on federal-provincial relations. Some provincial governments have already expressed considerable anxiety over the federal decision to set up the Pearse Inquiry on Federal Water Policy. An attempt to arrive at a more global division of environmental powers would likely elicit an even more hostile reception. Such an initiative could be perceived by provincial governments as a disguised attempt by the federal government to broaden its legislative and regulatory capacity in an area intrinsically linked to natural resources and municipalities, at a time when at least two provinces are contemplating the feasibility of water diversion projects.

Certain areas of responsibility fall clearly within the federal jurisdiction. These relate, inter alia, to situations where the national interest is involved and those in which the federal government is implicated by virtue of the interprovincial or international nature of the matter. It was suggested to the Study Team that, to better enable

the federal government to deal with these situations, technical amendments to the Clean Air Act and perhaps also the Canada Water Act might be in order. The Study Team has no views on this, but if it is decided that the enactment of such amendments is absolutely necessary, the Study Team feels strongly that these should be drafted and presented so as not to arouse unfounded suspicions that the federal government is attempting to claim more powers to itself.

b) The Federal Legal Regime

Environmental legislation in Canada dates as far back as 1873 with the Navigable Water Protection Act. However, as highlighted in the Study Team's historical analysis, most of the current federal and provincial legislation was enacted since the early 1970's, which has produced a multitude of laws with environmental implications across Canada.

The Minister of the Environment has a general responsibility for the resources held in common, such as air (Clean Air Act) and water (Canada Water Act) and for several multi-sectoral issues affecting the environment (Ocean Dumping Control Act, Environmental Contaminants Act). Sectoral ministers remain responsible for the influence which activities generated within their areas of responsibility have on the environment (Canada Shipping Act, Canada Oil and Gas Act, Oil and Gas Production and Conservation Act, Pest Control Products Act). Annex C illustrates the distribution of responsibilities among ministers for the various laws directly or indirectly dealing with the environment and lists most of the regulations which were made pursuant to these acts.

The allocation of legislative responsibilities, quite obviously, reflects previous organizational decisions to leave responsibility for the various aspects of environmental management with sectoral ministers. This is consistent with the Study Team's view that environmental concerns ought to be integrated into economic decisions. In this regard, the Study Team subscribes to the status quo and urges that whatever changes are made to any federal environmental legislation in the future maintain the dichotomy which should exist between the managers of the resources and the coordinator of environmental issues.

Nevertheless, the diffusion of legal responsibilities within the federal government and the new policy thrust proposed by the Study Team raise a number of difficulties and challenges which should be addressed.

First, the overlaps and resulting confusion. It should be pointed out that, regarding environmental protection of water alone, eleven major items of legislation can be listed: the Fisheries Act, the Canada Water Act, the Navigable Waters Act, the International River Improvements Act, the International Boundary Waters Treaty Act, the Northern Inland Waters Act, the Arctic Waters Pollution Prevention Act, the Ocean Dumping Control Act, the Canada Shipping Act, the Canada Oil and Gas Act, and the Transportation of Dangerous Goods Act. The definitions of various types of waters contained in these Acts differ from one to another. The geographic extent of the application of these statutes also varies. Several of the statutes contain cross-references to others, explaining their mutual application. This abundance of legislation has produced confusion as to the occasions on which it is appropriate to use each statute. Some streamlining of these Acts would be most useful to ensure that each sectoral act adequately addresses environmental concerns with due regard being paid, however, to the underlying coordination of environmental regulations and of their administration pursuant to these acts. The Study Team would strongly support early action along these lines.

In the North, legislative overlaps are particularly serious. There, the Territorial Lands Act, the Northern Inland Waters Act, the Fisheries Act, and the Arctic Waters Pollution Prevention Act are the key laws which, when read in conjunction with other laws such as the Oil and Gas Production and Conservation Act and the Ocean Dumping Control Act, make it virtually impossible for the stakeholders to know who among DFO, DIAND, DOE and EM&R officials should take the lead in given circumstances. Federal officials themselves have difficulties in understanding where their respective responsibilities begin and end in the various areas and in understanding the often duplicative regulations made pursuant to these acts.

It has been suggested to the Study Team that the untangling of this legislative mixture would be beneficial, not only for the better management of the Canadian legal

system itself, but also to assist the progressive development of the Canadian North. As the Ministerial Task Force had pointed out when addressing the issue of devolving federal responsibilities to territorial governments, some urgent rationalization is called for if the federal government wishes to avoid devolving confusion to territories. The Study Team subscribes to this goal and was offered a number of interesting suggestions which might prove useful in implementing the relevant provision of the study team report on Natural Resources.

One approach could be to draft new omnibus legislation but this alternative would be time-consuming and complex and should perhaps be left to the territorial governments after devolution. A second alternative would be to draft omnibus legislation developed from existing legislation, such as the Arctic Waters Pollution Prevention Act, which could be the cornerstone for offshore activities, while the Territorial Lands Act could deal with on-shore legislation. This alternative would be simpler than entirely new omnibus legislation but its development could be hampered by misunderstanding the timing and process by which devolution will occur and might not be consistent with the need to induce sectoral departments to take environmental factors into account. A third alternative might be to amend existing legislation or to amend or issue new regulations to correct some of their most fundamental weaknesses. Some possibilities along this line are to:

- ensure that the Territorial Lands Act specifically refers to the protection of environmental quality and values;
- use the regulations under the Territorial Lands Act as a model for regulations under other Acts directed toward protection of the onshore environment;
- give consideration to the creation of new bodies which would provide integrated environmental management coordination and cover the current responsibilities of the various organizations with environmental mandates in each territory;
- study the feasibility of using section 33(13)(f) of the Fisheries Act to delegate power to the Yukon Water Board to authorize, under specific and

negotiated conditions, the deposit of deleterious substances to be permitted under section 33(4) with prior authorization under section 31 of the Fisheries Act;

- consider removing the ocean bottom disposition from the Public Lands Grants Act and placing it in the Arctic Waters Pollution Prevention Act;

The second set of difficulties which should be addressed is with compliance. This can either be encouraged through a variety of means such as formal incentives (licensing, permits, tax expenditures, subsidies, grants, publicity on corporate behaviour) or enforced through disincentives (persuasion, action on licenses, Ministerial Orders, civil suits or criminal prosecutions). Federal regulators, in applying some legislation such as the Fisheries Act, generally tend to revert to an ex post facto approach based on disincentives rather than taking the less adversarial, yet more difficult, approach of incentives. Others, who rely more on voluntary compliance, such as DOE, do not appear to have made full use of the plethora of incentive means available. Part of the reason was attributed to inadequate administrative provisions in the acts they administer.

When reviewing the economics of the environment, the Study Team has suggested that, in order to gradually integrate environmental concerns into the decision-making process, a higher degree of compliance should be achieved through the use of an incentive approach rather than through disincentives. Clearly, civil and criminal court actions ought to be considered as remedies of last resort, when every other effort has failed to produce appropriate environmental behaviour. Even when such tools have to be used, in order to be equitable to those who comply with the letter and intent of environmental legislation, or to those who suffer from the inappropriate actions of others, enforcement across Canada has to be achieved with a relatively similar degree of fairness to all those who commit similar offences. This principle was fully recognized in the Regulatory Reform Strategy.

The allocation of environmental statutes among different responsibility sectors, however, unfortunately gives rise to an ill-structured and uncoordinated federal

approach to compliance. For instance, lesser environmental offenders under one federal statute sometimes sustain stiffer penalties than those imposed on other offenders under another statute, for a more serious environmental offence of a similar nature. Worse yet, some environmental offenders under one given statute, such as s. 33 of the Fisheries Act, often receive a disproportionately low penalty in one region, as compared to that imposed for a very similar offence in another region.

The Study Team is of the view that the formulation of a compliance policy, at least insofar as environmental statutes are concerned, is long overdue and that one should be developed without further delay. The Study Team feels strongly that a compliance policy review should emphasize the flexibility, which departments would require, to use incentives for pollution abatement rather than relying primarily on disincentives. However, the continued application of current disincentive measures would require improvements such as the cataloguing of the enforcement options available at law; the scaling of the response to situations of non-compliance according to the gravity of each situation; the determination of the lowest-scale response to each situation and agreeing on the circumstances of moving to more serious responses in case of continued non-compliance; the selection of criteria for deciding which cases will lead to prosecution; the standardization of responses to situations of similar gravity; and coordination of compliance actions both among federal departments and among federal and provincial governments.

The third area for improvement is monitoring. Monitoring activities under existing federal environmental laws and regulations are an essential component of the suggested policy review on compliance. The Study Team has seen very little information on the extent to which compliance with most environmental federal laws and regulations is carried out, but the information it has reviewed indicates that the pattern of monitoring of some statutes varies according to region, industry and specific product. This in itself can be explained by divergent impacts which various pollutants may have on the differing ecosystems in different regions.

Even if the Study Team were to assume, however, that these monitoring activities are effectively and efficiently carried out by all levels of government, the lack of full

consolidation of the information gathered prevents effective use and coordination of the various laws and regulations for the purpose of a comprehensive approach to environmental compliance nationally. The Study Team has already proposed that maximum use be made of provincial legislative and regulatory instruments to implement national base standards. Deputy ministers even suggested that provinces be tasked with the responsibility of administering certain additional federal regulations. If it is confirmed by Justice that this is indeed feasible under certain terms and conditions, then careful attention will have to be paid to how the federal government will ensure inter-regional consistency of various regulations in accordance with the Regulatory Reform Strategy. The suggested compliance policy is therefore critical and it should address those improvements needed for adequate monitoring activities on a national basis.

As was said before, the Study Team had access to little information on the extent to which federal regulations, other than s. 33 of the Fisheries Act, are monitored and acted upon. It nevertheless looked at one particular sector of interest: the pulp and paper industry. In the early 1970's, this sector was identified as a major source of pollution and became the first industrial sector subjected to comprehensive effluent standards promulgated, in 1971, under s. 33 of the Fisheries Act. Little action was taken until 1979, when the federal and provincial governments joined forces through the General Development Agreement 1974-1984. The sub-agreements on the Pulp and Paper Modernization Program, implemented through DREE, involved some $544 million of federal/provincial funding ($276 million federal) over a five-year period and were designed to assist in the modernizing of the pulp and paper industry for international competitiveness in keeping with the pre-determined pollution abatement objectives.

Recent media reports and public documents published by DOE suggest that, as a whole, compliance by this industrial sector with the negotiated standards is uneven and lower than had been anticipated in relation to the magnitude of the capital infusion. Compliance for two of the stated measurement parameters appears to be only 60% and 70%, and for a third (toxicity) it is only approximately 40%. Whether these results reflect the differing types of processes, different geographic regions, different pace of

implementation in different provinces, or inadequate segmentation of the data to differentiate between unmodernized and modernized plants, it is clear that the magnitude of government funds devoted to this initiative deserved a more thorough and public review on a periodic or annual basis.

There appears to be no formal post-audit plan for environmental performance by either DRIE or DOE. Current evaluations of the overall program only mention pollution control as an initial program criterion but they do not specifically assess this objective.

This example presents an excellent opportunity to study, for future reference, a case where there was an initial linkage of economics and the environment, but which has somehow fallen short of its objectives some fifteen years later, for reasons that are not well identified and with no follow-up, post-audit performance assessment process.

The use of criminal sanctions is the fourth area of difficulty which could be addressed. Most federal environmental statutes contain sections of a criminal nature. The Clean Air Act, for instance, prescribes a fine of not more than $200,000 for each offense relating to any emission into the ambient air in contravention of a standard set pursuant to that Act. The Environmental Contaminants Act sets out a fine of not more than $100,000 or a term of imprisonment of not more than one year for any willful release of a substance specified in the schedule to the Act into the environment, in a quantity or concentration that exceeds the prescribed maximum. The Canada Water Act indicates that a fine of not more than $5,000 per day may be imposed for either the deposit of waste of any type in waters comprising a water quality management area, or for the manufacture or importation into Canada of a cleaning agent that contains a prescribed nutrient in a concentration greater than the prescribed maximum. As pointed out earlier in this report, these statutes have given rise to very few prosecutions: two under the Clean Air Act and none under each of the Water and Environmental Contaminants Acts.

In addition to those offences established by the various environmental laws, there exist in the Criminal Code certain offences which could in principle be used to

"denounce, condemn and penalize" actions which result in harm to the environment. The most important ones among these are criminal negligence, common nuisance, mischief, causing disturbance, offensive volatile substance, explosive substances and offenses against animals. However, as reported by the Law Reform Commission of Canada (LRC), "criminal code offenses are seldom used as the basis of prosecutions for conduct seriously harmful or endangering to the environment. Even more seldom are such prosecutions successful". The Commission attributes this weakness to the narrow and limited arrangement and formulation of the Code in protecting the environment.

At present, the Code contains various offenses against persons and other offenses against property. The Law Reform Commission's proposal is to add to these a new category of offenses against the environment. The principal element of this category of offenses would be a single, conceptually unified "crime against the environment". Its role and justification would be to repudiate and deter conduct which seriously compromised the fundamental societal value and right to a safe environment. The new offense could be formulated broadly enough so that it would be made applicable to a wide range of activities and especially so as not to distinguish between harm to the air, water, land or any combination of these. It could apply to "conduct which seriously damages or endangers the environment by means of direct physical acts or in the course of the manufacture, transportation, use, storage or disposal of any hazardous or potentially hazardous goods, wastes or other contaminants."

The Study Team has not delved into the legal ramifications of the LRC proposal but finds it conceptually compatible with the "cradle to grave" approach espoused by the Minister of Environment, which the Study Team shares, on the toxic chemicals issue. The Study Team believes, however, that the Criminal Code should only be used for actions willfully conducted, such as dumping PCBs in municipal sewage systems. Otherwise, the Study Team's plea to rely more extensively on an incentive approach would be lost and the private sector's collaboration in the new policy thrust would soon be hidden away behind a layer of curtains.

Finally, there is the matter of policy. Today, the various environmental clauses contained in the multitude of relevant federal legislation constitute, de facto, the only formal expression of the federal government's environmental policy. The Study Team has already suggested that such a national policy be developed and consideration might be given to incorporating this policy within new legislation.

The Minister of the Environment has made his intention known to bring in far-reaching amendments to the Environmental Contaminants Act to manage toxic chemicals from "cradle to grave". This initiative could eventually result in considerable streamlining of existing legislation if, as planned, the relevant provisions of the Canada Water Act and of the Clean Air Act are incorporated in this new legislation and if these two Acts were to be repealed. The Study Team subscribes to the suggested approach, which was already anticipated some eight years ago when the Minister of Environment lost control of his most powerful pollution abatement tool (s. 33 of the Fisheries Act) to the Minister of Fisheries and Oceans who has a different constituency to satisfy. However, it is probable that the powers to deal with environment contained in such a new law would fall considerably short of those which the Minister of Fisheries and Oceans has today. In fact, the Study Team was told on numerous occasions that, if s. 33 of the Fisheries Act were being enacted by Parliament today, it could not likely be as powerful. Thus, the eventual legislative mandate for DOE, while useful on many fronts, including filling some of the gaps which exist between the numerous relevant federal Acts, will still require a cooperative federal-provincial approach which could easily be launched immediately by DOE, using existing legislation.

The legal analysis and the necessary consultations that will be required to come forward with a comprehensive legislative package dealing with the whole spectrum of legislative environmental problems within the federal government will take a few years. Yet, the Study Team's review of deputy ministers' views and its subsequent consultations with key stakeholders suggest that some early legislative initiatives would be possible on three fronts.

The Environmental Contaminants Act clearly needs to be strengthened so as to require the provision of test data, assist in the identification of priorities among existing

chemicals, give new powers to regulate international movements, require justification for the need for new chemicals and make improvements in interjurisdictional communication of information, while ensuring the confidentiality of proprietary information. The purpose of the Act is to enable the federal government to keep up with rapid advances in the development of new chemicals. The advantage of enacting the above amendments would be to give federal authorities a firmer hand in controlling which of these products are on the market and under what circumstances. This initiative would provide tangible evidence of the federal government's commitment to take preventive measures on toxic chemicals and would give it additional leverage to convince provinces to take early action on clean-ups.

The second possible early legislative initiative could be to amend the Hazardous Products Act. The changes proposed would allow early implementation of the existing multipartite agreement on the Workplace Hazardous Materials Information System (WHMIS), which would introduce chemical management information delivery improvements in the areas of classification of hazardous products, labelling and the requirement for the provision of material safety data sheets. At present, the control mechanisms established by virtue of the Act relate to only four substances. The protection of environmental health in the workplace would make the proposed amendments beneficial and would provide an incentive for provinces to follow the recent initiative taken by Ontario in this respect.

In response to the recommendations contained in various writings as well as to those of the Pearse Inquiry, a proposal to enact Safe Drinking Water legislation could be quickly brought before Cabinet. The Department of National Health and Welfare has already concluded successful consultations with other federal departments, the provinces and the Canadian Water Quality Association in this respect. Current national guidelines have no force in law and these would be replaced by National Water Quality Objectives, which would be issued in the form of regulations. This would encourage consistency across Canada. The Study Team was informed that several provinces are ready to enact supporting legislation in this area of divided jurisdiction. Such an early response to Pearse will also reinforce the new thrust in cooperative relationships with

the provinces. In the view of the Study Team, members of the public should have an opportunity for input into the process of regulation-making pursuant to this legislation.

Conclusions

Several conclusions can be derived from the foregoing analysis of the existing legislative framework for the delivery of the federal environmental mandate in the future:

1. The whole thrust of the proposed economic, communications and scientific approach to support the regulatory responsibilities of the federal government on environmental quality issues is fully consistent with the Regulatory Reform Strategy and most initiatives could be implemented under existing legislation.

2. A review of the total environmental-related federal legislation must nevertheless begin on an urgent basis to streamline the confusion, duplication and overlaps which currently exist among the great variety of federal laws and regulations and to improve the administrative flexibility ministers should have to rely more extensively on incentive.

3. However, this review of the constitutional, administrative, compliance, criminal and policy aspects of the various pieces of legislation should abide by the following guidelines:

    a) major amendments should be guided by a clearly enunciated statement of a national environmental policy, yet to be developed;

    b) amendments should be so crafted as to minimize provincial suspicions that the federal government is attempting to arrogate more powers to itself; otherwise the necessary federal-provincial cooperation which is so essential to early pollution abatement measures would be lost;

    c) sectoral ministers should remain totally responsible and accountable for the manner in which they administer the environmental aspects of their

respective Acts and regulations; however, due consideration should be given to the necessary horizontal coordination of relevant regulations in the process;

d) in considering those amendments, emphasis should be placed on providing sectoral departments with considerably more latitude in the administrative provisions of their legislation to favour the use of incentive measures, rather than relying primarily on disincentives, for pollution abatement;

e) particular attention should be devoted to unravelling the confused system of environmental legislation affecting the North to eliminate the difficulties presently encountered, which would also have the beneficial effects of assisting its progressive development and of ensuring that confusion is not transferred to the North in the context of devolving federal responsibilities to territorial governments;

f) consideration should be given to strengthening and rationalizing criminal sanctions for actions seriously harmful or endangering to the environment, either through appropriate amendments to the relevant Acts, or through a revision of the Criminal Code, or through both.

g) early Justice advice should be provided on the extent to which, and the terms and conditions under which the administration of federal laws and regulations on the environment could be administered by provinces.

4. Meanwhile, considerable emphasis should be given to improving the monitoring capabilities under federal and provincial environmental laws and regulations to improve fairness and probity of their application and to support the development of a National Compliance Policy for the environment, largely based on an incentive approach which will require more adequate monitoring support.

5. Urgent action is required to bring forward immediately essential amendments to the Environmental Contaminants Act and Hazardous Products Act and to introduce a Safe Drinking Water Bill.

OPTIONS

In view of the foregoing, the study team suggests the government consider the following options:

1. New major legislative initiatives, with an environmental quality dimension, be based on the understanding that sectoral ministers should remain responsible and accountable for integrating environmental concerns in their ongoing responsibilities; that any amendment to any Act should be so crafted as to minimize unfounded provincial suspicions that the federal government is attempting to arrogate more power to itself; and that they should incorporate the results of a comprehensive review by the Department of Justice of the legislative framework of the federal government on the environment, including, inter alia:

   a) early advice on the extent to which and the terms and conditions under which the administration of federal laws and regulations on environmental quality could be administered by the provinces;

   b) identification of those technical amendments which might be required to reduce instances where the constitutional validity of federal laws and regulations could be challenged;

   c) recommendations for streamlining and, wherever possible, consolidating environmental legislation and regulations, with due regard for underlying improvements in the administration of environmental regulations and their coordination, with the necessary attention to the legislation administered by the Minister of the Environment;

   d) development, in consultation with the Territorial Governments and aboriginal groups, a unique response to the complex and special problems of the North after considering the most effective approach among the following alternatives: new omnibus legislation

for the North; or omnibus legislation developed from existing legislation, both for offshore and onshore activities; or technical amendments to existing Acts, or amendments to or the issuance of new regulations; the purpose of which should be to correct some of the existing weaknesses of federal Acts in the North, such as:

i) ensuring that the Territorial Lands Act specifically refers to the protection of environmental quality and values;

ii) using the regulations under the Territorial Lands Act as a model for regulations under other Acts directed toward protection of the onshore environment;

iii) giving consideration to the creation of bodies which would provide integrated environmental management coordination of the current responsibilities of the various organizations with environmental mandates in each territory;

iv) studying the feasibility of using section 33(13)(f) of the Fisheries Act to delegate power to the Yukon Water Board to authorize, under specific and negotiated conditions, the deposit of deleterious substances to be permitted under section 33(4) with prior authorization under section 31 of the Fisheries Act;

v) considering removing the ocean bottom disposition from the Public Lands Grants Act and placing it in the Arctic Waters Pollution Prevention Act;

e) preparation of a comprehensive compliance policy which would, inter alia, consider methods to maximize use of incentive methods rather than relying solely on punitive ones to induce compliance; and provision of the additional administrative flexibility Ministers may need pursuant to the new compliance policy, for the ongoing management of their respective Acts;

f) review of the existing disincentives and punitive legislative measures to ensure maximum consistency across Canada, either within any given Act or amongst different Acts for similar offences of comparable gravity;

g) consideration of the Law Reform Commission recommendation to amend the Criminal Code to enhance its flexibility to deal with actions seriously harmful or endangering to the environment.

VII. A SHORT-TERM AGENDA

The suggested new approach for the delivery of the federal environment quality mandate represents a major shift from recent practices. But its various positive effects will not be immediate. For instance, even if an early decision in principle was made to establish the proposed National Council on the Environment, extensive consultations with provincial governments and other stakeholders would be required before proceeding with the necessary legislation. Several years would also be required for the Council to design, establish and perfect the truly national and comprehensive data base needed to translate the proposed State of the Environment reports into genuine accountability instruments for all stakeholders and regions of Canada. The enhanced coordination and priorizing of the total national environmental science effort may or may not produce early positive results, and the process by which more convergence of differing scientific interpretations will occur is a gradual one. Moving away from the "advocacy" approach will also require a change of culture within the Department of the Environment, which must be accomplished through a clearly defined and careful process. The Department needs to improve its credibility with stakeholders in order for it to be accepted as an effective and balanced regulator. This credibility must be earned through concrete achievements by the Department, which will also take some time to materialize. Finally, the development of a National Compliance policy, the legislative review of overlaps, gaps, possibilities for consolidation and the problem in the North will take two or three years at least.

Therefore, the Study Team has attempted, drawing from its analysis, to list a number of issues which could serve as the basis for a more elaborate short-term agenda and which would lend additional credence to the federal government's commitment to provide national leadership in this area through immediate, visible and tangible actions. This short term agenda would complement both those initiatives which the Minister of the Environment intends to bring forward and the approaches proposed by the Study Team, which themselves should lead to considerable, albeit longer term, environmental quality results.

Early action on some short-term initiatives would provide a clear and early demonstration of the commitment to environmental quality on the part of the federal government, gain support for its leadership role, signal a consultative approach, reinforce its credibility with stakeholders and confront serious environmental problems.

Consultations and action can and should begin now on these short-term issues and on all other suggested initiatives. The Study Team therefore proposes that the Minister of the Environment and other responsible ministers be mandated by Cabinet to prepare a short-term agenda specifying actions they intend to take and deadlines they wish to set for problem resolution. Periodic progress reports might be useful.

a) Legislative Initiatives

i) bring forward amendments to the Environmental Contaminants Act that would require the provision of a standard set of test data on new chemicals, assist in the identification of priorities for testing of existing chemicals, give new powers to regulate international movements, require justification for the need for new chemicals and make improvements in inter-jurisdictional communication of information, while ensuring the confidentiality of proprietary information;

ii) bring forward amendments to the Hazardous Products Act to allow early implementation of the existing multi-partite agreement on W.H.M.I.S. (Workplace Hazardous Materials Information System), which would introduce important chemical management information delivery improvements in the areas of classification of hazardous products, labelling and the requirement for the provision of material safety data sheets. This initiative could then be paralleled by provincial efforts to enact supporting legislation, ensuring adequate worker education. The proposal for prompt action on this initiative is underscored by the fact that provinces, which have been waiting for federal action in this respect, are now beginning to move independently due to federal inaction;

iii) following a short, final round of consultations with the provinces, proposals for legislation should be brought before Cabinet at the earliest possible moment for a Safe Drinking Water Act. The Department of National Health and Welfare has already concluded successful consultations with other federal departments, the provinces and the Canadian Water Quality Association in this respect. Current national guidelines have no force in law and these would be replaced by National Water Quality Objectives, which would be issued in the form of regulations. This would encourage consistency across Canada. Provinces are ready to enact supporting legislation in this area of divided jurisdiction. Such action would provide one early response to Pearse and will also reinforce the new thrust in cooperative relationships with the provinces.

b) Management of Chemicals

The following initiatives be considered in the context of comprehensive toxic chemical proposals:

i) new levels of lead in gasoline based on the recent Royal Society of Canada study on lead content in gasoline and its effects, be proposed at the earliest possible moment;

ii) leadership and assistance be provided to provinces in the matter of hazardous waste dumps through technology transfer, any required coordination to establish common facilities, identifying and responding to the needs for national guidelines, codes and standards;

iii) present for Cabinet consideration a comprehensive national plan to control and reduce dioxins, wherever possible, to include specific support for two important areas - the National Incineration Toxic Emission Program (NITEP) and quality assurance programs for seven federal laboratories performing dioxin analyses;

iv) an early action plan be prepared with respect to hazardous waste disposal sites on federal lands,

for implementation on a priority basis to clean up high risk dumps.

c) Acid Rain

i) the recent study for ministers on heavy duty vehicle emission standards be pursued and new emission standards be introduced as required;

ii) while current efforts on acid rain, primarily directed at SO^2 and NO_2, must continue, additional effort be directed towards the study of hydrocarbons emissions and ozone creation.

d) Great Lakes Clean-Up

The environmental situation in the Great Lakes continues to be an issue of highest concern, is wide-scale and merits a high federal priority. This issue, because of its complexities and uncertainties, requires comprehensive, integrated management and careful shepherding under federal leadership to bolster the scientific effort, develop and implement new objectives for pollution abatement and remedial action. This will involve a close liaison with the International Joint Commission, affected provinces and other interested groups. This activity would be a vital demonstration of Canada "putting its own house in order", and would be particularly well-linked to a needed review and renewal of the Great Lakes Water Quality Agreement with the United States. Therefore, the Great Lakes clean-up should be intensified as a federal-provincial special environmental project and be given a high priority and profile, and a declaration of ongoing commitment.

e) Water Quality

New approaches be devised with the provinces to ground water and aquifer management, where there are international and interprovincial implications and for which a federal role is required.

f) Indoor Air Quality

Standards for indoor air quality must be developed and the need for additional research must be ascertained.

There is already in place a federal-provincial working group on the issue and its efforts should be intensified. Clean-up efforts in federal buildings must be undertaken.

g) **Good Laboratory Practice**

Action be taken to promote Good Laboratory Practice in Canadian environmental laboratories through the development of improved protocols to be met under which laboratory studies are planned, performed, monitored and recorded and reports prepared.

Conclusion

These initiatives and others, coupled with a revisiting of all ERDA's and their sub-agreements by federal and provincial economic ministers, the launching of federal-provincial negotiations on Environmental Planning Agreements, the undertaking of consultations with key stakeholders on the suggested National Council on the Environment, and the initiation of consultations and negotiations on standards, would provide immediate, visible and tangible evidence of the federal commitment to its new policy thrust of better integrating environmental quality concerns in the economic decision-making process.

ACKNOWLEDGEMENT

The members of the Study Team wish to acknowledge the substantial participation and collaboration of officials of various departments, and particularly those of the Department of the Environment, in conducting this review. The Study Team realizes that, if approved, its suggestions represent a formidable challenge to departmental officials, and more particularly so in a time of restraint. We hope that our proposals will support the evident dedication of departmental officials to the long-term interests of Canada from an environmental perspective.

Department of the Environment Act (extract) (Government Organization Act, 1970)	Department of the Environment (extract) Government Organization Act, 1979)	Comparison of the 1970 and 1979 DOE Legislation
5. The duties, powers and functions of the Minister of the Environment extend to and include all matters over which the Parliament of Canada has jurisdiction, not by law assigned to any other department, branch or agency of the Government of Canada, relating to	5. The duties, powers and functions of the Minister of the Environment extend to and include	1) 1979 Act eliminates DOE responsibility for "sea coast and inland fisheries," which was to be in the responsibilities of the DFO.
(a) sea coast and inland fisheries;	(a) all matters over which the Parliament of Canada has jurisdiction, not by law assigned to any other department, board or agency of the Government of Canada, relating to	
(b) renewable resources, including	(i) the preservation and enhancement of the quality of the natural environment, including water, air and soil quality,	2) s.s. 5(a)(i) of the 1979 Act provides for "preservation and enhancement of the quality of the natural environment ...", replacing s.s.5(e) of the 1970 Act which provided for "protection and enhancement ...". This would appear to be a somewhat broader phrasing.
(i) the forest resources of Canada, (ii) migratory birds, and (iii) other non-domestic flora and fauna;	(ii) renewable resources, including the forest resources of Canada, migratory birds and other non-domestic flora and fauna,	3) N.B. Responsibility for forestry resources was transferred to Agriculture Canada, with the naming of a Minister of State for Forestry, in September 1984.
(c) water;	(iii) water,	
(d) meteorology;	(iv) meteorology,	
(e) the protection and enhancement of the quality of the natural environment, including water, air and soil quality;		

Department of the Environment Act (extract) Government Organization Act, 1970)	Department of the Environment (extract) (Government Organization Act,1979)	Comparison of the 1970 and 1979 DOE Legislation
(f) technical surveys within the meaning of the Resources and Technical Surveys Act relating to any matter	(v) notwithstanding paragraph 5(f) of the Department of National Health and Welfare Act, the International Joint Commission, promulgated pursuant to the treaty between the United States of America and His Majesty, King Edward VII, relating to boundary waters and questions arising between the United States and Canada, so far as they relate to the preservation and enhancement of the quality of the natural environment; and	4) s.s. 5(f) of the 1970 Act was not required in the 1979 Act. Reading the DOE Act, in conjunction with the EMR Act and the Mines and necessary to conduct such surveys.
(g) notwithstanding paragraph (f) of section 5 of the Department of National Health and Welfare Act, the enforcement of any rules or regulations made by the International Joint Commission, promulgated pursuant to the treaty between the United States of America and His Majesty, King Edward VII, relating to boundary waters and questions arising between the United States of America and Canada, so far as the same relate to pollution control.	(vi) the coordination of the policies and programs of the Government of Canada respecting the preservation and enhancement of the quality of the natural environment; and	5) s.s. 5(a)(vi) of the 1979 Act was added on Justice advice only for confirmation of the Minister's powers, as the same provision already existed in s. 6(a) of the 1970 Act and continues in s.s. 6(1)(a) of the 1979 Act.
	(b) such other matters over which the Parliament of Canada has jurisdiction relating to the environment as are by law assigned to the Minister.	6) s. 5(b) of the 1979 Act was new, but is merely confirmatory.

Department of the Environment Act (extract) (Government Organization Act, 1970)	Department of the Environment (extract) (Government Organization Act, 1979)	Comparison of the 1970 and 1979 DOE Legislation
6. The Minister of the Environment, in exercising his powers and carrying out his duties and functions under section 5, shall	6. (1) The Minister of the Environment, in exercising his powers and carrying out his duties and functions under section 5, shall	
(a) initiate, recommend and undertake programs, and coordinate programs of the Government of Canada, that are designed to promote the establishment or adoption of objectives or standards relating to environmental quality, or to control pollution; and	(a) initiate, recommend and undertake programs, and coordinate programs of the Government of Canada that are designed	
	(i) to promote the establishment or adoption of objectives or standards relating to environmental quality, or to control pollution,	
(b) promote and encourage the institution of practices and conduct leading to the better protection and enhancement of environmental quality, and cooperate with provincial governments or agencies thereof, or any bodies, organizations or persons, in any programs having similar objects.	(ii) to ensure that new federal projects, programs and activities are assessed early in the planning process for potential adverse effects on the quality of the natural environment and that a further review is carried out of those projects, programs, and	7) s.s. 6(1)(a)(ii) and (iii) of the 1979 Act were new. The former provided a statutory underpinning for the existing environmental assessment and review process, without creating a new statutory regulatory organization or regime. The latter confirmed an activity previously undertaken by the department.

Department of the Environment Act (extract) (Government Organization Act, 1970)	Department of the Environment (extract) (Government Organization Act, 1979)	Comparison of the 1970 and 1979 DOE Legislation
	activities that are found to have probable significant adverse effects, and the results thereof taken into account, and (iii) to provide to Canadians environmental information in the public interest;	
	(b) promote and encourage the institution of practices and conduct leading to the better preservation and enhancement of environmental quality, and cooperate with provincial governments or agencies thereof, or any bodies, organizations or persons, in any programs having similar objects; and	8) s.s. 6(1)(b) of the 1979 Act substitutes the word "preservation" for the word "protection" in the 1970 Act, s. 6(b).
	(c) advise the heads of departments, boards and agencies of the Government of Canada on all matters pertaining to the preservation and enhancement of the quality of the natural environment.	9) s.s. 6(1)(c) of the 1979 Act was new, but confirmed a role already played informally by the Minister of the Environment.

Department of the Environment Act (extract) (Government Organization Act, 1970)	Department of the Environment (extract) (Government Organization Act, 1979)	Comparison of the 1970 and 1979 DOE Legislation
	(2) For the purposes of carrying out his duties and functions related to environmental quality, the Minister of the Environment may, by order, with the approval of the Governor in Council, establish guidelines for use by departments, boards and agencies of the Government of Canada and, where appropriate, by corporations listed in Schedule C of the Financial Administration Act and regulatory bodies in the exercise of their powers and the carrying out of their duties and functions.	10) s. 6(2) of the 1979 Act was new, with the clear indication that these were to be guidelines, <u>not</u> directives.
	(3) The Minister of the Environment may, with the approval of the Governor in Council, enter into agreements with the government of	11. s. 6(3) of the 1979 Act was new, allowing for federal/provincial agreements with provinces for carrying out federal programs, to minimize overlaps and to rely to the

Department of the Environment Act (extract) (Government Organization Act, 1970)	Department of the Environment (extract) (Government Organization Act, 1979)	Comparison of the 1970 and 1979 DOE Legislation
	any province or any agency thereof respecting the carrying out of programs for which the Minister is responsible.	maximum extent possible on provincial administration. Note: The provision described in items 7, 9, 10 were to be visible expressions underlining the horizontal coordinating role of the Minister and that in item 11 was considered fundamental to the new mandate of DOE.

ANNEX B

EVOLUTION OF ENVIRONMENTAL CONCERNS IN THE WORLD

I. A Globalistic Approach

The Macdonald Commission considered it essential to include in its report a survey and analysis of the major trends evolving in the world to enable Canadians to better assess, in a global context, the opportunities and problems which are of greatest concern. Among the five particular aspects of global environment (human, natural, knowledge, economic and political), the Commission made considerable efforts to relate Canada's natural environment to the international context in agriculture, minerals, energy and forests. This analysis led the Commission to conclude that although individual countries, such as Canada, have a responsibility to base their economies on exploitation of the earth's resources at rates that do not exceed the capacity of the ecosystem to accommodate it, concerted international cooperation and action remains essential to bring industrialized societies back into balance with the natural world. In this context, the Commission highlighted Canada's leading role in the Declaration of the Stockholm Conference of 1972 which launched international awareness of the environment, Canada's contribution to the United Nations Environment Program and to the successful passage, in 1983, of the United Nations General Assembly's resolution creating the World Commission on Environment and Development.

This globalistic approach to environment was already recognized in international forums in the 1960's. On the one hand, industrialized countries realized that their compelling and urgent development priorities caused some adverse effects on the environment and international consultations were seen as a useful instrument to improve their understanding of possible economic trade-offs. On the other hand, developing countries viewed environmental solutions as short term imperatives: unsafe drinking water, malnutrition, inadequate sanitation, ill health and natural disasters. This common concern, although initially for different reasons, gave rise to a flurry of international activities under the United Nations umbrella in the 1970's.

The OECD Response

The Organization for Economic Cooperation and Development (OECD) was at the leading edge in realizing the growing linkage which had to be made between the economies of the industrial countries and the global natural environment, and considerable efforts were devoted to develop expertise in this area. For instance, as early as 1971, with an increasing number of the 24 member countries considering legislative approaches to chemicals control, it launched a program on chemicals under its Environment Committee in 1971. The program has grown in scope since, and a number of major steps, such as "mutual acceptance of data", OECD Test Guidelines, OECD Principles of Good Laboratory Practice, and the Minimum Premarketing Set of Data, have been taken towards harmonization of chemicals control policies and legislation.

OECD State of the Environment Reports

One of the most interesting OECD initiatives in the field of environment was the publication in 1979 of its first State of the Environment Report, which has now been followed by a second issue in 1985 (SOE 1985). These reports assess the state of the environment in all member countries. Their purpose is to aid member countries in responding to public demands for environmental information and to assist them to define, implement and evaluate environmental policies and to incorporate environmental concerns into decision making. The OECD survey is particularly useful given that, while OECD countries contain 17% of the world's population and cover 24% of its land area, they account for 69% of GDP and world trade, for 81% of chemical product exports, 89% of automobile exports and about 75% of forest product imports. The OECD, therefore, considers the reporting on the state of the environment to be critical in the formulation of global environmental management policies for sustained use of the environment and its resources.

Some basic environment indicators contained in the SOE 1985 tend to demonstrate the progress made in dealing with many of the urgent environmental problems during the

last fifteen years. These include: reduced urban air pollution by sulfur dioxide, particulate matter and carbon monoxide; improved water quality due to reduced biochemical oxygen load in effluents; fewer oil tanker accidents; improved management of municipal waste; reduced entry into the environment of some persistent chemicals such as DDT, PCB's and mercury compounds; increased designation of managed national parks and nature preserves; and better protection of some threatened game species, flora and fauna.

However, environmental data and expert analysis contained in the OECD reports show that a number of problems have so far proved difficult to master in most countries. For air quality, evidence is accumulating on adverse health, ecological and economic effects from major air pollutants (sulfur and nitrogen oxides, hydrocarbons) and the long-range transport of their secondary products such as photochemical oxidants and acidic compounds; from potential global impacts from increased carbon dioxide and fluorocarbon concentrations; and from pollution problems in urban areas from oxides of nitrogen, photochemical smog and fine particulates.

For inland waters, problems include pollution of surface and groundwater by nitrogenous fertilizers and pesticides; drinking water, which after treatment, still contains organochlorinated substances, nitrogen compounds or metals; increased eutrophication of lakes (a process by which a body of water becomes rich in dissolved nutrients such as phosphates leading to excessive growth of water plants; the resulting biomass causes seasonal deficiency in dissolved oxygen and, over time, the body of water becomes shallower); and damage to people and property by floods.

For marine environment there are still concerns over dumping at sea of wastes (industrial, radioactive, sludge, dredging spoil); oil pollution from land-based sources and from tanker accidents; heavy and conflicting pressures, such as industry and tourism on coastal areas; the state of regional seas such as the Baltic Sea, North Sea, Mediterranean, Caribbean and Japan's Inland Sea; and over-fishing of a number of species in some fishing regions.

For potentially hazardous substances, remaining problems include the screening and testing of existing chemicals for their effects on human health and the environment; the development and implementation of more effective control and accident prevention measures for the movement of hazardous substances; and the cleaning up of abandoned contaminated sites and hazardous waste dumps.

Concerning noise, the general acoustic environment of urban areas of OECD countries has not improved. Remaining sources of disturbance and concern include aircraft noise, noise from cars and trucks, as well as neighbourhood noise and noise at work.

While the slow pace of progress with these problems can be partially explained by the relatively slow economic growth and budget cuts over the 1979-1985 period, the report argues that the evidence on the more intractible environmental problems suggests that environmental efforts will need to be further strengthened.

The report then goes on to identify a number of other environmental concerns which have been identified more recently. These emerging concerns can be grouped under three major headings: new pollution concerns, natural resources concerns, and environmental risks.

a) New Pollution Concerns

"There is new concern about a new generation of pollution issues, often complex in terms of measurement, analysis and action, and often implying onerous financial and economic consequences".

More sophisticated methods of measurement and analysis have catapulted some highly toxic chemical compounds, often present in minute amounts in air, water and soil, into increasing prominence. In addition, there is deepening concern over diffuse emissions of pollutants such as seepage from abandoned chemical dumps, as well as multiple exposure from a number of contaminants through eating, drinking water and breathing air at work, in the home, or elsewhere.

b) Natural Resource Concerns

"The field of environmental concerns has further grown to embrace a new range of pressing and strategic issues concerning natural resources of key ecological, economic and social importance." Included are issues involving the quantity and quality of water resources, the degradation of land and soil resources, the conflicts over forest resources between environmental and economic concerns, and the new recognition of the need to maintain the genetic diversity and foundation of wildlife resources.

c) Environmental Risks

The environmental risks identified in SOE 1985 are of three major types: i) health, ecological and economic risks from exposure to substances that may cause genetic changes, cancer or birth deformities, or the ecological, economic and social risks associated with increased carbon dioxide concentrations in the atmosphere; ii) environmental risks related to industrial accidents and other exposures to hazardous substances; more than 60 significant accidents of these types have occurred in OECD countries alone over the past 10 years; iii) environmental risks related to natural disasters such as floods, earthquakes, tornadoes, volcanic eruptions; more than 170 significant disasters in OECD countries alone over the past 10 years are identified in the Report.

"Despite notable differences between these types of risks, they all have a number of characteristics in common. The uncertainties involved concern the probability of the event's occurrence, the nature and scale of the damage (for example, the exact toxicity of a product) and the likely extent of any damage (for example, the damage to people and property). Decisions need to achieve a balance between prevention and cure. Should a disaster nonetheless materialize, mitigation and compensation mechanisms will be necessary."

SOE 1985 stated that coordinated opinion polls carried out in the USA, Japan and eleven European countries during the period 1981 to 1984 revealed a public willingness to

support environmental protection programs, even at the expense of some economic growth. Basic environmental indicators demonstrated a number of achievements during the last 15 years, such as reduced urban air pollution by sulfur dioxide, particulate matter and carbon monoxide, improved management of municipal waste, reduced entry into the environment of some persistent chemicals such as DDT, PCB's and mercury compounds. However, the extent of this progress is unevenly distributed throughout the OECD region, for example southern European countries have often started later with their environmental protection efforts than northern European countries which have already made considerable headway. (While definitive data is largely lacking, the extent of progress in Canada may be taken as paralleling the headway made by northern European countries.) While more than 65% of the population is served by waste water treatment plants in such countries as the USA, France, Germany, Sweden and the UK, less than 35% are served in such countries as Japan, Belgium, Greece, Italy, Portugal and Spain. In Canada, approximately 60% of the population is served by waste treatment plants. Environmental problems for which evidence is accumulating on adverse health, ecological and economic effects, have so far proved difficult to master in most countries. These include problems concerning air quality, inland waters, marine environment, hazardous substances and noise.

Throughout the 1970's, the OECD also conducted and published comprehensive individual reviews of environmental management policies and practices in several countries including Sweden (1977), Japan (1977), and New Zealand (1981). These examined the impact of present, and possible future, developments on the human, physical and biological environment of each country. While an OECD Report on Greece has also been published, the Study Team did not consider it to be of sufficient relevance to its work to be included herewith.

OECD Reviews of Individual Countries

a) Sweden

The OECD reports Sweden's policy objectives to be to prevent, as far as possible, further environmental

deterioration, and to restore already deteriorated parts of the environment; environmental protection should help preserve the nation's resources for future generations. To achieve these objectives, like most other countries, Sweden has had to rely on legislation, regulation and economic incentives such as subsidies. The overall Swedish approach appears to be uniquely attuned to its system and culture of government and relates particularly to the fact that Sweden is a unitary state. The real strength of the Swedish system lies in the mutual confidence between the regulator, who expects the regulatee to comply, and the regulatee who feels confident his competitors will also comply given that they were also part of the standard-setting exercise. This cooperation and the system of personal contacts most often leads to consensus on policy goals and policy means and reduces adversarial processes to a minimum. To avoid possible clashes between environmental and commercial interests, implementation rules for the 1971 Swedish PCB Act were worked out in close consultation between environmental authorities and the Board of Commerce. This system of consultation is now applicable to other products, such as pesticides.

The Swedish Act on Products Hazardous to Man or to the Environment, which came into force in 1973, is one of the central pieces of their environmental law, and is supported by regulations governing the manufacture, sale, other handling and importation of such products. It is interesting to note that the Act requires that administrative action be based on "objectively acceptable indications" of risk; risk must be balanced against possible social and economic benefits from a continued use of the product. At the time the OECD Report was written, few cases of balancing risks and benefits had occurred and the overall effectiveness of Swedish legislation in overcoming implementation problems involving risk/benefit analysis remained to be established.

A Products Control Board is responsible for the implementation of the Products Hazardous to Man or to the Environment Act. Day-to-day control to ensure that the legislation is being obeyed is exercised centrally by the National Environment Protection Board and the National

Board of Industrial Safety. Control in the field is handled by the County Administrations, the Industrial Safety Inspectorate and the Public Health Committees. The control authorities have certain means of coercion at their disposal. Compliance with the Act is also ensured by penal provisions. It is interesting to note that, through various machinery of government tools, Sweden has integrated their chemicals management and industrial safety, and that the operational vehicles are a series of boards and county administration units.

The Products Control Board promulgates general regulations on handling and import and has powers to direct, co-ordinate and monitor all other aspects of product control, and to function as a central agency for dealing with related matters. The Board initiates and co-ordinates surveys of the field and investigations of products that can be suspected of being hazardous.

The Products Control Board includes heads of related boards, and also of the National Social Welfare Board, the National Food Board and the National Consumer Board, along with members representing the employees and one representing the business community. This illustrates the degree to which all stakeholders are involved and actively participate in the decision-making process.

The second major piece of legislation, the Environment Protection Act, states in very general terms the conditions under which real estate (i.e. land, buildings and installations) can be used for such continuous activities that might cause "disturbances, interferences or nuisance" to the surrounding environment. The disturbances referred to in the Act are, for example, discharge of waste water, solid matter, or gas, and any other use that may lead to a deterioration of environmental quality. Under the Act, interferences are such things as air pollution, noise, vibration, light or other such phenomena. A number of activities are regulated so that they cannot be undertaken, unless permission has been granted by the Franchise Board or notification has been submitted to the Environment Protection Board or to the Administration of the county concerned.

The basic principle of the Act is that any disturbances should be prevented to the greatest possible extent. The Act is also applicable to cases where there is a risk of a deterioration of environmental quality.

In view of the general formulation of the permissibility rules, the Environment Protection Act is essentially a frame of reference for the authorities. The general statements of the EPA are clarified in the Environment Protection Ordinance (EPO) which lays out procedural steps to be taken by the concerned authorities. The EPO specifies the activities covered by the general clauses of the EPA and identifies 38 types of industrial plants which may not be put into operation without permits from the responsible authority. The Ordinance furthermore lists 33 other kinds of plants which may not be erected, unless an application has been submitted to the County Administration. Among the activities which require a permit are mining, iron and steel production, pulp and paper production, food processing, manufacture of chemical products and fossil fuel power generation.

Permit applications are examined by the Franchise Board for Environment Protection. The Franchise Board is very similar to a court of law, and the legal status of its decisions is comparable to a court decision.

b) New Zealand

New Zealand is reported to have one of the least polluted and least congested environments among OECD countries. Economic development has been accompanied by environmental changes less drastic than those encountered in most other OECD countries. It appears that New Zealand has managed to maintain high environmental quality in the face of development due to four factors: the physical features of the country; the nature of its economic development; public concern and action to conserve the environment; and governmental response to this public concern.

Responding to public pressure for the preservation of the environment, the New Zealand government established a number of statutes starting in the 1970's providing for the

establishment of particular agencies concerned with the environment. From the beginning, the concept of a single omni-competent environmental ministry was refuted for the purposes of environmental management on the grounds that this would disrupt many long-established agencies while leaving others equally relevant to environmental policy untouched. Similarly, the device of an independent statutory agency was rejected because it would impair the principle of ministerial responsibility. Rather, some adjustment was made to the policies of existing management agencies along with some additional emphasis on integration within sectoral programs.

For instance, in 1972, a new portfolio of Minister of the Environment was created with the sole responsibility to ensure that environmental concerns are given full weight in Cabinet and in Committee deliberations. To support the Minister, a non-statutory educational and advisory Commission for the Environment was established. An Environmental Council also exists to advise the government on a variety of specific issues and on grants allocations. It also liaises with departments, local authorities and non-governmental groups. The Nature Conservation Council plays an advisory/consultative role, encourages survey and research, enquires into scientific matters, publishes reports and encourages and participates in educational activities. In order to ensure that government departments and management agencies would reflect environmental considerations and improve public participation and consultation processes, a number of statutory procedures were put in place, namely the Water and Soil Conservation Act 1967, Clean Air Act 1972, Town & Country Planning Act 1977, Pesticides Act 1979, Toxic Substances Act 1979, National Development Act 1979 (environmental impact assessment).

In the 1980's New Zealand expects to enter a new phase of development that could see a further intensification of its agricultural industry, a continued expansion of forest industries, changes in urban development, transportation and communications, more tourism, and increased use of fresh and marine water resources. The New Zealand government has undertaken to make available to the public authoritative information at the earliest possible stage of planning so

that public reaction and views may be taken into account in further planning.

In summary, despite its good environmental record, New Zealand is expected to accelerate its efforts on more and consistent monitoring both for emissions and ambient concentrations of pollutants as available air pollution data tend to suggest that levels of carbon monoxide, oxides of nitrogen, and lead from automobile emissions have increased in some of the major cities. While smoke and sulfur oxide levels are growing steadily, ambient air concentrations of most pollutants are within recommended World Health Organization limits. There is increasing stress on water quality both from point and non-point sources but the quantitative evidence is not sufficient to provide exact information.

c) Japan

By the late sixties, Japan had become one of the most polluted countries in the world. An abrupt change in societal attitudes on the acceptability of environmental disruption led to the quick development and implementation of strong and multi-faceted policies.

The rising pollution trends for a number of pollutants, particularly in the fields of air pollution (sulfur dioxide, particulate matter, carbon monoxide, PCB's, cadmium, and mercury), have been greatly reduced and the best known sources of pollution-related diseases appear to have been largely eliminated in Japan. However, oxides of nitrogen pollution, BOD (biological oxygen demand) and COD (chemical oxygen demand), for example, have not yet been significantly reduced.

Japanese pollution abatement policies have relied basically upon the setting of ambient standards by the national government, coupled with the setting of emission standards by local governments. Emission standards are often made more stringent by local governments, which often engage in plant-by-plant negotiations and agreements (planning mechanisms) to define emission allowances. Since

action is motivated by profit, not by compliance, it is widely recognized that pollution is a case of "market failure", i.e. uncorrected market mechanisms breed pollution. The Japanese approach also appears to have strong moral overtones. Japan did not attempt to adhere strictly to cost-benefit analysis, but pollution abatement was considered a moral obligation, backed by very strong political pressures. Such measures were not very strongly opposed by the business community because it felt that its image, and its place in Japanese society, were at stake. While anti-pollution expenditures were high, the overall impact of such additional costs on the Japanese economy does not appear to have been great, or even significant. What is cost to one enterprise is income to another enterprise -- and may well bring additional business to the first enterprise.

Although these policies largely succeeded in abating pollution, they did not succeed in eliminating environmental discontent, which stemmed basically from the decreasing environmental "amenities" including quietness, beauty, privacy, social relations and other elements of the "quality of life". The Japanese people and the Japanese authorities are now trying to develop broader-based environmental policies, dealing not only with pollution control, but also with the preservation of their national and cultural heritage and with the promotion of well-being in general. Towards this end, the key element is probably the organization of public participation in the decision-making processes. While difficult and costly, Japan is well equipped to do it, and the OECD feels confident that in the years to come, Japan will improve environmental quality as efficiently as it reduced pollution levels.

d) Australia

The OECD has not reviewed Australia, but it is included in the present Study because the Australian National University published in 1985 a study entitled Federalism and the Environment, which described the political, legislative, administrative, constitutional, economic and heritage aspects of environmental policies in Australia, with special reference to the division of powers between Commonwealth and

State governments. The Australian constitution does not make any specific reference to 'environment'; anything not given to the Commonwealth specifically by the Constitution is the responsibility of State governments, which is the opposite of Canada. Nevertheless, this has not prevented the Commonwealth from enacting legislation within the fields of environmental policy and natural resource management. In general, but subject to caveats, natural resources utilization, land-use planning and nature conservation programs are the prerogative of the States, with the Federal role limited to suasion for minimum standards, research assistance and the provision of funds for some resource conservation activities. Nearly all the administration is by the states. In addition, the Commonwealth jurisdiction includes federal sites and buildings within states and all Federal Territories, including some offshore islands and Antarctica.

During the 1970's, widespread public concern about the environment, new and emergent resource development needs and various international obligations forced the Commonwealth government to take a more direct role with the result that many of the decisions taken would subsequently be seen to impinge upon State jurisdictions.

The national environmental policy rests on four main statutes:

a) the Environment Protection (Impact of Proposals) Act 1974, which ensures that matters affecting the environment to a significant extent are considered in all plans and actions of Federal agencies;

b) the Australian Heritage Commission Act 1975, which provides for identification, registration and protection of important elements of enduring national significance;

c) the Australian National Parks and Wildlife Conservation Act 1975, which provides for the establishment and management of parks and reserves in Federal Territories, the protection of some nature conservation sites and the meeting of various international obligations; and

d) the Great Barrier Reef Marine Park Act 1975, which provides for the establishment and management of this Park.

In addition, other legislation deals with safeguards in uranium mining and exports, grants to the states for nature conservation purposes and, in 1983, a World Heritage Properties Conservation Act to implement international treaty obligations. Under this Act, the High Court of Australia ruled that the Commonwealth government could prevent the Tasmanian government from proceeding with a hydro-electric project in a wilderness area. This judgment implies that adherence to international obligations permits Federal intervention in regional jurisdictions if actions are deemed detrimental to environmental quality or heritage conservation. "Both levels of government are uncertain of the implications of this case and are likely to proceed cautiously if analogous situations arise in the future."

The present institutional arrangements, including those in the federal system are always changing. However, present arrangements between the Commonwealth and the states are reported to work reasonably well although claims have been made that federal legislation is an erosion of state rights. It is also argued that too much discretion is permitted the Minister under the Environmental Protection (Impact of Proposals) Act. While environmental impact assessments are rarely conducted, the federal authority does enforce the provisions of those studies which are carried out. In parallel with these Commonwealth provisions, some Australian states have introduced land-use management reforms, environmental impact assessment, enlarged national park systems, air and water quality controls, and some coastal and marine conservation guidelines. "Yet the overall performance is patchy, with much political expediency evident whenever private corporations seek resource exploitation rights or States are in competition to attract economic development." There are variants among states arising from immense variations of climate, terrain, resource endowment and population distribution, as well as the relative strengths and influence of development-oriented agencies and interests vis-à-vis their conservation counterparts.

The Australian conservation movement comprises a collection of some 1198 voluntary organizations scattered across the nation with increasing memberships. They use community education and lobbying in their attempt to achieve new modes of natural resources management, the preservation of ecological diversity and what they believe to be improved standards of environmental protection.

The report states that the record of environmental politics in Australia over the past two decades reflects a mixed pattern of "tokenism, prevarication, experimentation, achievement and ongoing dilemmas". The report concludes that, despite significant advances in environmental policy and natural resources management, there are still many identified weaknesses highlighted in government reports, academic journals, publications of voluntary conservation organizations and the media. Whether these assertions are correct or not, they are evidence of community concern and help explain why some protracted and bitter conservation battles have been fought in recent years in Australia over the states rights issue.

e) United States

In the United states, the social liberalization of the late 1960's brought popular focus to bear on the quality of the environment and the federal government subsequently initiated a series of responses, which have consistently over time reflected a regulatory approach.

Many of the U.S. environmental programs remain under the administration of sectoral departments and bodies of the U.S. Government completely independent of its Environmental Protection Agency. Like in Canada, the number of departments and agencies involved with environmental matters is significant. These include the Council on Environmental Quality (CEQ), the Department of Defence, each of the Armed Services, the Departments of Energy, Agriculture, Labour and Interior, the Tennessee Valley Authority and the American Section of the International Joint Commission. Coordination among all these bodies is generally effected through memoranda of understanding and interagency committees at the level of officials. The Office of Management and the Budget

also has considerable influence through its coordination of resource allocation and its input into the appropriations system of the legislative branch.

In 1969, Congress enacted the Clean Air Act and it passed the National Environmental Policy Act (NEPA). This Act established the Council of Environment Quality, a wing of the Executive Office of the President. Among its primary functions are the publication of an annual Environmental Quality Report for the President, which is then transmitted to Congress. This is a detailed and exhaustive review, bolstered by considerable scientific evidence, on the state of environmental quality. Its other key functions are general advice to the President and under NEPA, the conduct of administrative examinations of all projects having an EPA permit, which projects are then either approved, amended to CEQ's satisfaction, or cancelled. The NEPA legislation itself can best be described as a code of environmental behaviour for the United States government and all its branches. It also contains a statement of national environmental policy and a declaration of the government's responsibility to improve and coordinate federal programs to preserve and enhance the environment. The NEPA further directs that all laws be interpreted in accordance with the policy goals expressed in the Act. It also instructs government officials on ways in which environmental concerns are to be taken into account in their respective activities.

In 1970, the recommendations of the Ash Commission on government organization to integrate conceptually related environmental programs under a single administrative umbrella were accepted and the Environmental Protection Agency was established.

The Administration's intention to create an institution of government focusing on environmental work was not global, however. The conceptual framework of EPA was that it would house all policies and programs and be responsible for all legislation relating to pollution abatement, with the exception of radiation, which was thought to constitute a special case. Other policies, programs and legislation, however, those dealing with resource management, were to be left outside EPA. That is the case even today and the

previously named departments and agencies still continue to exercise considerable environmental mandates and the EPA is merely one, albeit an important one, in the U.S. government.

With such a great number of actors, EPA is still the focus of environmental activity in the U.S. government. It is an independent arm of the executive branch of the government and reports directly to the President. The EPA is also a stand-alone agency in terms of its funding by, and accountability to, Congress. The Administrator of EPA is not a Cabinet Secretary and thus attends Cabinet on an ad hoc basis only, upon invitation.

EPA was intended to achieve uniformity among the environmental programs then in force, both as between various departments of the federal government as well as among Washington and the several States. It was to achieve this that EPA became the transferee of some of the major environmental programs of the U.S. Government.

The Environmental Protection Agency fulfills several functions with respect to the environment:

a) it sets regulatory standards and issues permits to applicants meeting those standards;

b) it enforces compliance on both the civil and criminal levels by prosecuting those violating the standards;

c) it provides financial assistance to State and local governments on condition that these come into compliance with federal standards with respect to the undertakings so financed;

d) it conducts research and development and cooperates with the R&D work of other government bodies;

e) it engages in informal administrative procedures through its in-house Administrative Law Judges and participates in environmental litigation with the cooperation of the Department of Justice; and

f) it establishes guidelines in the environmental field for other arms of the federal government, although the enforceability of its powers in this regard are not clearly defined.

EPA's legislative mandate flows from a number of statutes enabling it to deal with matters relating to water, air, noise, radiation, solid waste, pesticides and toxic substances, as well as responses to emergencies.

Despite the structural fragmentation, through use of its extensive powers, the EPA has succeeded, despite a history of uneven leadership, in achieving a focal position on the environmental scene in the United States. But as the most visible environmental instrument of the U.S. government, EPA must therefore support much of the consequence of growing public disillusion over environmental legislation and regulations. EPA is said to have induced undue expectations and grossly underestimated effort, expense and time necessary to achieve those results.

ANNEX C

LIST OF THE PRINCIPAL FEDERAL ENACTMENTS HAVING A BEARING ON THE ENVIRONMENT

AERONAUTICS ACT	Minister of Transport
Airport Zoning Regulations	
ANIMAL DISEASE AND PROTECTION ACT	Minister of Agriculture
Animal Disease and Protection Regulations	
ARCTIC WATERS POLLUTION PREVENTION ACT	Ministers of Indian Affairs and Northern Development and Transport
Arctic Shipping Pollution Prevention Regulations Arctic Waters Experimental Pollution Regulations Arctic Waters Pollution Prevention Regulations Governor in Council Authority Delegation Order	
ATOMIC ENERGY CONTROL ACT	Minister of Energy, Mines and Resources
Atomic Energy Control Regulations Transport Packaging of Radioactive Materials Regulations Uranium Mines (Ontario) Occupational Health and Safety Regulations	

CANADA LABOUR CODE . . . . . Minister of Labour

Canada Confined Spaces Regulations
Canada Dangerous Substances Regulations
Safety and Health Committee Regulations

CANADA LAND SURVEYS ACT . . . . . Ministers of Energy, Mines and Resources and Indian Affairs and Northern Development

CANADA OIL AND GAS ACT . . . . . Minister of Energy, Mines and Resources
(TO BE REPLACED BY THE CANADA PETROLEUM RESOURCES ACT)

Environmental Studies Revolving Fund Regions Regulations

CANADA SHIPPING ACT

Air Pollution Regulations
Dangerous Goods Shipping Regulations
Fisherman's Notice of Claim for Loss of Income Regulations
Garbage Pollution Prevention Regulations
Great Lakes Sewage Pollution Prevention Regulations
Maritime Pollution Claims Fund Regulations
Oil Pollution Prevention Regulations
Pollutant Substances Regulations

CANADA WATER ACT . . . . . Minister of the Environment

Phosphorus Concentration Control Regulations

CANADA WATER ACT (Cont'd)

Guidelines for Canadian Drinking Water Quality
Guidelines for Effluent and Wastewater Treatment at Federal Establishments

CANADA WILDLIFE ACT . . . . . .Minister of the Environment

Assigning to the Minister of the Environment, the Administration, Management and Control of Certain Public Lands
Wildlife Area Regulations

CANADIAN CENTRE FOR OCCUPATIONAL HEALTH AND SAFETY ACT . . .Minister of Labour

CANADIAN ENVIRONMENTAL WEEK ACT . . . . . .Minister of the Environment

CANADIAN HOME INSULATION PROGRAM ACT . . . . . .Minister of Energy, Mines and Resources

Canadian Home Insulation Regulations

CLEAN AIR ACT . . . . . .Minister of the Environment

Ambient Air Quality Objectives Order: No. 1
Ambient Air Quality Objectives Order: No. 2
Ambient Air Quality Objectives Order: No. 3
Asbestos Mining and Milling National Emission Standards Regulations
Chlor-Alkali Mercury National Emission Standards Regulations
Fuels Information Regulations, No. 1

CLEAN AIR ACT (Cont'd)

Leaded Gasoline Regulations
Lead-Free Gasoline Regulations
Metallurgical Industries Arsenic Information Regulations
Metallurgical Industries Mercury Information Regulations
Secondary Lead Smelter National Emission Standards Regulations
Vinyl Chloride National Emission Standards Regulations

Asphalt Paving Industry National Emission Guidelines
Packaged Incinerator National Emission Guidelines
Arctic Mining Industry Emission Guidelines
Cement Industry National Emission Guidelines
Metallurgical Coke Manufacturing Industry Emission Guidelines
Thermal Power Generating Emissions National Guidelines for New Stationary Sources
Wood Pulping Industry National Emission Guidelines

CRIMINAL CODE . . . . . Minister of Justice

DEPARTMENT OF TRANSPORT ACT . . . . . Ministers of Transport and the Environment

Canal Regulations
Heritage Canals Regulations

ENERGY SUPPLIES ALLOCATION ACT, 1979 . . . . . Minister of Energy, Mines and Resources

ENVIRONMENTAL CONTAMINANTS ACT . . . . . Ministers of the Environment and National Health and Welfare

ENVIRONMENT CONTAMINANTS ACT (Cont'd)

Chlorobiphenyl Regulations No. 1
Chlorobiphenyl Regulations No. 2 (Product)
Chlorobiphenyl Regulations No. 3 (Release)
Chlorofluorocarbon Regulations
Mirex Regulations
Polybrominated Byphenyl Regulations
Polychlorinated Terphenyl Regulations

Guidelines for the Management of PCB Wastes

EXPLOSIVES ACT . . . . . Minister of Energy, Mines and Resources

Ammonium Nitrate and Fuel Oil Order
Explosives Regulations

EXPORT AND IMPORT PERMITS ACT . . . . . Secretary of State for External Affairs

FEEDS ACT . . . . . .Minister of Agriculture

Feeds Regulations, 1983

FERTILIZERS ACT . . . . . .Minister of Agriculture

Fertilizers Regulations

FISH INSPECTION ACT . . . . . .Minister of Fisheries and Oceans

Fish Inspection Regulations

FISHERIES ACT . . . . . Minister of Fisheries and Oceans (There is a special arrangement regarding administration of s. 33 of this Act.)

Alice Arm Tailings Deposit Regulations
Approve Orders Prohibiting the Landfilling and Associated Construction in Tilbury and Deas Sloughs on the Fraser River in British Columbia
Chlor-Alkali Mercury Liquid Effluent Regulations
Fishways Obstructions Removal Regulations
Meat and Poultry Products Plant Liquid Effluent Regulations
Metal Mining Liquid Effluent Regulations
Penalties and Forfeitures Proceeds Regulations
Petroleum Refinery Liquid Effluent Regulations
Potato Processing Plan Liquid Effluent Regulations
Pulp and Paper Effluent Regulations
Guidelines for Pulp and Paper Effluent Regulations
Meat and Poultry Products Plant Effluent Regulations
Existing Metal Mining Liquid Effluent Guidelines
Existing Petroleum Refinery Liquid Effluent Guidelines
Fish Processing Operations Liquid Effluent Guidelines
Metal Finishing Liquid Effluent Guidelines
A Code of Good Housekeeping Practice for the Metal Finishing Industry
Petroleum Refinery Liquid Effluent Guidelines
Potato Processing Plant Effluent Guidelines
Toxicity Guidelines for Potato Processing Plants

FISHING AND RECREATIONAL HARBOURS ACT . . . . . .Minister of Fisheries and Oceans

FOOD AND DRUGS ACT . . . . . .Minister of National Health and Welfare

FORESTRY DEVELOPMENT AND RESEARCH ACT . . . . . .Minister of Agriculture

GAME EXPORT ACT . . . . . .Minister of the Environment

GOVERNMENT ORGANIZATION ACT, 1970 . . . . . .Minister of the Environment
(PART I: DEPARTMENT OF THE ENVIRONMENT ACT)

GOVERNMENT ORGANIZATION ACT, 1979 . . . . . .Minister of the Environment

(PART III: AMENDMENTS TO THE DEPARTMENT OF THE ENVIRONMENT ACT)

Environmental Assessment and Review Process Guidelines Order

GREAT LAKES FISHERIES CONVENTION ACT . . . . . .Minister of Fisheries and Oceans

HAZARDOUS PRODUCTS ACT . . . . . .Minister of Consumer and Corporate Affairs

HISTORIC SITES AND MONUMENTS ACT . . . . . .Minister of the Environment

INDIAN ACT . . . . . .Minister of Indian Affairs and Northern Development

Indian Reserve Waste Disposal Regulations

INDIAN OIL AND GAS ACT . . . . . .Minister of Indian Affairs and Northern Development

Indian Oil and Gas Regulations

INTERNATIONAL BOUNDARY WATERS TREATY ACT . . . . . .Secretary of State for External Affairs

INTERNATIONAL RIVER IMPROVEMENTS ACT . . . . . .Minister of the Environment

International River Improvements Regulations

LAC SEUL CONSERVATION ACT . . . . . .Minister of Indian Affairs and Northern Development

LAKE OF THE WOODS CONTROL BOARD ACT . . . . . .Minister of Indian Affairs and Northern Development

MIGRATORY BIRDS CONVENTION ACT . . . . . .Minister of Environment

MOTOR VEHICLE SAFETY ACT . . . . . .Minister of Transport

Motor Vehicle Safety Regulations

Notice of Intent to Examine Auto Emission Standards

NATIONAL BATTLEFIELDS AT QUEBEC ACT . . . . . .Minister of the Environment

NATIONAL ENERGY BOARD ACT . . . . . .Ministers of Energy, Mines and Resources and Transport

NATIONAL ENERGY BOARD ACT (Cont'd)

Gas Pipeline Regulations
International Power Line Regulations
National Energy Board Part VI Regulations
Oil Pipeline Regulations

NATIONAL HOUSING ACT . . . . . .Minister of Public Works

NATIONAL PARKS ACT . . . . . .Minister of the Environment

National Parks Regulations:
Garbage
Water and Sewer

NATIONAL TRANSPORTATION ACT AND RAILWAY ACT . . . . . .Minister of Transport

Canadian Transport Commission General Orders:
Air Pollution and Smoke Control Regulations (No. O-26)
Ammonium Nitrate Storage Facilities Regulations (No. O-36)
Anhydrous Ammonia Bulk Storage Regulations (No. O-33)
Chlorine Tank Car Unloading Facilities Regulations (No. O-35)
Flammable Liquids Bulk Storage Regulations (No. O-32)
Railway Hygiene Regulations (No. O-3)
Regulations for the Transportation of Dangerous Commodities by Rail

NAVIGABLE WATERS PROTECTION ACT . . . . . .Minister of Transport

NEWFOUNDLAND NATIONAL PARK ACT . . . . . .Minister of Indian Affairs and Northern Development

NORTH PACIFIC FISHERIES CONVENTION ACT . . . . . .Minister of Fisheries and Oceans

NORTHERN CANADA POWER COMMISSION ACT . . . . . .Minister of Indian Affairs and Northern Development

NORTHERN INLAND WATERS ACT . . . . . .Minister of Indian Affairs and Northern Development

Northern Inland Waters Regulations

NORTHERN PACIFIC HALIBUT FISHERIES CONVENTION ACT . . . . . .Minister of Fisheries and Oceans

Canadian Pacific Halibut Regulations

NORTHERN PIPELINE ACT . . . . . .Minister of Transport

NORTHWEST ATLANTIC FISHERIES CONVENTION ACT . . . . . .Minister of Fisheries and Oceans

NUCLEAR LIABILITY ACT . . . . . .Minister of Energy, Mines and Resources

Canada-United States Nuclear Liability Rules

OCEAN DUMPING CONTROL ACT . . . . . .Minister of the Environment

Ocean Dumping Control Regulations

OIL AND GAS PRODUCTION AND CONSERVATION ACT . . . . . .Ministers of Energy, Mines and Resources and Indian Affairs and Northern Development

OIL SUBSTITUTION AND CONSERVATION ACT . . . . . .Minister of Energy, Mines and Resources

Canada Oil Substitution and Conservation Regulations

OTTAWA RIVER ACT

PACIFIC FUR SEAL CONVENTION ACT . . . . . .Minister of Fisheries and Oceans

PACIFIC SALMON FISHERIES CONVENTION ACT . . . . . .Minister of Fisheries and Oceans

PEST CONTROL PRODUCTS ACT . . . . . .Minister of Agriculture

Pest Control Products Regulations
Guidelines for Registering Pesticides and other Control Products under the Pest Control Products Act in Canada

PESTICIDE RESIDUE COMPENSATION ACT . . . . . .Minister of Agriculture

Pesticide Residue Compensation Regulations

PRAIRIE FARM REHABILITATION ACT . . . . . .Minister of Agriculture

PUBLIC LANDS GRANTS ACT . . . . . .Minister of Indian Affairs and Northern Development

PUBLIC WORKS ACT . . . . . .Ministers of Public Works and Transport

Public Works Nuisances Regulations

RADIATION EMITTING DEVICES ACT . . . . . .Minister of National Health and Welfare

Radiation Emitting Devices Regulations

RAINY LAKE WATERSHED EMERGENCY CONTROL ACT . . . . . .Secretary of State for External Affairs

SEEDS ACT . . . . . .Minister of Agriculture

Seeds Regulations

SKAGIT RIVER VALLEY TREATY IMPLEMENTATION ACT . . . . . .Secretary of State for External Affairs

TERRITORIAL LANDS ACT . . . . . .Minister of Indian Affairs and Northern Development and Secretary of State for External Affairs

Canada Mining Regulations
Canada Oil and Gas Drilling and Production Regulations
Canada Oil and Gas Land Regulations
Territorial Land Use Regulations
Territorial Lands Regulations

TRANSPORTATION OF DANGEROUS GOODS ACT . . . . . .Minister of Transport

Dangerous Goods Inspectors Regulations
Dangerous Goods Protective Direction Regulations
Transportation of Dangerous Goods Regulations

UREA FORMALDEHYDE INSULATION ACT . . . . . .Minister of Consumer and Corporate Affairs

Urea Formaldehyde Foam Insulation Regulations

WATERTON GLACIER INTERNATIONAL PEACE PARK ACT . . . . . .Minister of Indian Affairs and Northern Development

WEATHER MODIFICATION INFORMATION ACT . . . . . .Minister of the Environment

Weather Modification Information Regulations

YUKON ACT . . . . . .Minister of Indian Affairs and Northern Development

Yukon Archaeological Sites Regulations

YUKON PLACER MINING ACT . . . . . .Minister of Indian Affairs and Northern Development

YUKON QUARTZ MINING ACT	Minister of Indian Affairs and Northern Development
Emergency Planning Order	Minister of the Environment (Responsibility for the Environment portion of emergency planning)